

SELECTED ADDRESSES

BY

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FOREWORD.

“To train a band of efficient medical women to carry skilled surgical and medical relief to the women of India who are in purdah in the Zenanas and in so doing to help the people of India to become a stronger race.” This has been one of the objects during a period of 25 years of a life spent in the Province of Bengal —surely one worthy of remembrance!

On the occasion of the departure from India of Lieut.-Col. V. B. Green-Armytage, I.M.S., this collection of his “ Selected Addresses ” is being published by some of the medical women in India as a token of their esteem for, and appreciation of, a great teacher and a loyal friend.

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An Address on Obstetrics and Gynæcology in the days of the Patriarchs.

My particular reason for thinking that the subject on which I am about to address you might be of interest to you arose recently when I was delving in the Bible for anthropological evidence of endocrine influence, such as might bear upon the matter of the "hirsute man of action" and "the smooth man of thought," and whereas I might have mentioned Nimrod, Goliath, Samson, Judith, or Jezebel, each of them respectively illustrative of hyper-adrenalism, hyper-pituitarism, and hyper-thyroidism, I chose rather to quote the birth of Esau and Jacob which, from an Anglo-Saxon point of view, cannot fail to be of interest to those of us who dwell in the Delta of the Ganges.

In my search it occurred to me that it might be of more than ordinary interest to observe, from an expert point of view, the references in the Rabbinical writings to Gynæcology and Obstetrics, and to this end I have used the Moffat Translation, the Revised Version, and the Douay Authorised Translation.

I do not intend to stray far outside the path of my title, but perhaps it may entertain those of you who follow work at the Tropical School of Medicine to study that wonderful description of bacillary dysentery in the Second Book of Chronicles, Ch. 21, v. 15 and 19, and then to pass on to the picture of the oncoming of the Monsoon in the First Book of Kings, Ch. 18, v. 43-45.

STERILITY.

Throughout the Old and New Testaments there are multiple references bearing on the psychological importance of the possession of children, for children are regarded as Divine gifts, *vide* Gen. Ch. 4, v. 1; and Ch. 33, v. 5; and Ps. 127, v. 3.

This is a natural conclusion in a developing country where more hands meant better crops, and especially in the

case of weak tribes, in which man-power was much needed for continual wars.

It is not surprising, therefore, that barrenness is looked upon as a reproach, thus, Sarah was despised by Hagar, her handmaid, in Gen. Ch. 16. v. 4, for Sarah was primarily sterile and only later conceived after a long period of amenorrhœa, *vide* Gen. Ch. 18, v. 11.

Again, Rachael in Gen. Ch. 30, v. 1, through envy of Leah, cried "give me a child or else I die"; and in 1 Sam. Ch. 1, v. 6, we find Hannah's rival taunting her because the Lord "hath shut up her womb." In St. Luke, Ch. 1, v. 25, it says that "Elizabeth rejoiced when the Lord took away her reproach among men"; and again in St. John, Ch. 16, v. 21, our Lord refers to "the joy of a woman at the birth of a man child into the world."

It is of considerable interest to find such classical examples of elderly primiparæ and note that presumably in those times these children were born without trouble to either mother or child; whereas to-day circumstances and experience so frequently indicate Cæsarean section for such cases. The elderly primiparæ mentioned are Sarah (Gen. Ch. 21, v. 2), who bore Isaac; Manoah's wife (Judges 13, v. 24), who bore Samson; Hannah (1 Sam. Ch. 1, v. 20), who bore Samuel; the Shulanite woman (11 Kings, Ch. 1, v. 17); and Elizabeth (St. Luke, Ch. 1, v. 36), who bore John, and in whom "quickening" at about the 20th week is first mentioned.

In connexion with sterility it may here not be out of place to enquire how it is that Jews, despite all persecution, are now, as then, the most prolific people in the world. From a Biblical point of view there would appear to be two reasons, which in those days were empirical, based on minute observations of the priests, but to-day are proved to have a scientific explanation.

The first reason is in the diet. This consisted of substances perfect in A. B. C. D. and E. vitamins, for instance, read David's entertainment (11 Sam., Ch. 17, v. 28) of "wheat, barley and meal, and parched corn, beans and lentils and olives, honey and butter, and sheep and cheese of kine"; and that of Solomon in 1 Kings, Ch. 4, v. 22, which is much the same, included "fatted fowl and fatted oxen."

It is not necessary to refer to the countless enumeration of fruits and vegetables including cucumbers, melons, leeks, onions, and garlic, though as a sidelight it is perhaps interesting, in view of the modern sugar fomentation, that "a lump of figs" was prescribed by Isaiah as "a plaster" for Hezekiah's boil (11 Kings, Ch. 20, v. 7).

From the above diet it would therefore seem that the work of Mellanby, McCarrison, Plimmer, and Marshall in Great Britain, and Dickinson in America, on the effects of food on reproduction and health were empirically anticipated by the patriarchs; and that the maxim "the vitamins are to the endocrines what the endocrines are to the economy," was instinctively realized by the Jewish people. One must, however, admit from the story of Rachael and Leah that superstition, or medicinal properties apparently attached to mandrakes (love-apples in Moffat), for in Gen. Ch. 30, v. 14, it is written "Reuben going out at the time of the wheat harvest found mandrakes which he brought to his mother Leah, and Rachael said: 'Give me part of thy son's mandrakes', and Jacob slept with Leah that night and she conceived"; and later also "Rachael conceived."—Mandrake is *Mandragora Autumnalis* (Solanaceæ), and is an antispasmodic.

The second reason for the multiplication of the people of Israel is to be found in the Book of Leviticus, in which those rules for coitus are laid down which are of such extreme interest in view of the recent work of Wilfred Shaw, Novak, and others on ovulation; for it has been proved that ovulation does not occur until the 13th to the 17th day of the menstrual cycle, counting the cycle as beginning on the first day of the period. Now coitus is forbidden to orthodox Jews before eight days after the last day of the period, that is, coitus is not permitted until approximately the time of ovulation.

Moreover, with reference to the above rules as regards coitus, and menstruation, it is a remarkable fact that the orthodox Jewish woman is almost immune to cancer of the cervix uteri. Is this immunity the result of circumcision and therefore of greater cleanliness, or is it because their code permits no extraneous organisms to enter the vagina during the first eight days after the menstrual period—that is, during a time when the vagina is alkaline and its resistance to infection therefore least: for we now know that

the acid protective florá of the vagina and cervix are not normally actively present until the seventh or eighth day following menstruation.

May one not therefore suggest that the ultramicroscopic organism of Gye and Barnard or the "individual potential virus" is neutralized in the orthodox Jewess by these rules for coitus laid down in the Mosaic Laws; for, one would expect in a community in which large families are the rule rather than the exception, that cancer of the cervix uteri would be particularly common.

Moreover, in a people bound by such laws of cleanliness, it is not surprising to find that there are very strict prophylactic rules for prevention of infection in women; for instance, in Lev. Ch. 15, it is laid down that "the man that hath an issue of seed shall be unclean and then shall he be judged subject to this evil when a filthy humour at every moment cleaveth to his flesh and gathereth there. If he who suffereth this disease be healed, he shall number seven days after his cleansing and having washed his clothes and all his body in living water he shall be clean." It is probable that this is the first mention of venereal infection in the Bible.

LABOUR.

Considering the family character of the Biblical narrative, it is perhaps surprising that there are not more accounts of abnormal parturition. A possible explanation of this fact may be that, with a healthy population and healthy diet, difficult labour did not occur very often. There are, however, references to traumatic miscarriage and abortion in Ex. Ch. 21, v. 22, and Num. Ch. 12, v. 12.

Labour was in the hands of midwives probably of the Sarah Gamp or Sage Femme type, who did little beyond ironing the vagina and giving kindly advice; though it is obvious from the reference (Job. Ch. 26, v. 13) "his obstetric hand brought forth the winding serpent," that operative midwifery, probably version, was practised.

In Ex. Ch. 1, v. 15, it is written "and the King of Egypt spoke to the midwives of the Hebrews, commanding them that, when they attended the Hebrew women and saw them on the birth-stool they were to kill the child if a male and let it live if a girl"; and when they did not

obey him they answered the King's enquiry by saying, "because the Hebrew women are not like the Egyptian women, they are brisk creatures and delivered before ever a midwife reaches them." The Revised Version translates this passage "the Hebrew women are skilful in the office of a midwife and are delivered before we come to them."—the "B.B.A." (born before arrival) of the modern student.

It is, however, pleasing to recognize that then, as now, a good midwife was treasured and flourished exceedingly, for one reads "God dealt well with the midwives and built them houses."

The meaning of the "birth-stool" is of interest, for it would seem that postural treatment of labour cases was regularly practised by the Ancients. Indeed, the squatting position is that used to-day in the East for a hard labour, and there is no doubt of its efficacy as I have myself noted in occipito posterior cases. The purchase given to the patient by her arms round her knees in the squatting position promotes flexion, rotation, and descent of the head, and this presumably is the meaning of Gen. Ch. 30, v. 3, "go in unto her that she may bear upon my knees," and Job Ch. 3, v. 12, "why received upon the knees." For then, as now, among many primitive people the travailing mother was placed either squatting between the knees of the midwife, or in a kneeling position bending over her thighs.

The birth-stool, or *Kreisstuhl*, as the Germans call it, can be seen in France and Germany to-day, just as it can be seen in parts of India, Japan and China, and it certainly has mechanical if not æsthetic advantages.

In a work published in 1637 called "The Expert Midwife" by James Rueff, we have an exposition of the use of this stool, which is of historical interest. "Let the stoole be made compassewise, under-propped with four feet, the stay of it behind bending backward, hollow in the midst, covered with a blacke cloth underneath, hanging downe to the ground; by that means the labouring woman may be covered, and the other women sometimes apply their hands in any place, if necessity require. Let the stoole be furnished and covered with many cloths and clouts at the back and other parts, that the labouring woman receive no hurt of the infant anywhere, strongly kicking and striving because of the pains, stirrings and motions of the mother. After the labouring woman be placed in her chair about

to be delivered, the midwife shall place one woman behind her back which may gently hold the labouring woman, taking her by both the arms, and if need be, the pains waxing grievous may stroke and presse downe the wombe, and may somewhat drive and depress the infant downwards. But let her place other two by her sides which may both, with good words, encourage and comfort the labouring woman, and also be ready to helpe and put to their hand at any time. This being done, let the midwife herself sit stooping forward before the labouring woman and let her anoint her own hands and the womb of the labouring woman with oile of lillies of sweet almonds and the grease of a hen mingled and tempered together. For to do this doth profit and help them very much which are gross and fat and them whose secret parts are strict and narrow, and likewise them who have the mouth of the matrix dry, and such women as are in labour with their first child." From this description we may picture the use of the birth-stool in the days of Moses.

The first record of a midwife attendance is in Gen. Ch. 38; v. 27, and is of great interest, for it represents classical treatment, and is the first published case of spontaneous evolution with live uniovular twins and ruptured amniotic sac, or sacs, which, according to Whitridge Williams, is very rare, only 44 cases being on record. It is interesting to note that Viardel in the 17th Century first observed this and stated that, when twins were of the same sex they were usually enclosed in a single amnion; whereas twins of different sexes were separated by a partition wall; he expressed the belief that Providence took this means of guarding their morals *in utero*!

The passage in the Bible, referred to above, runs: "Thamar appeared to have a big belly, and when she was ready to be brought to bed there appeared twins in her womb, and, in the very delivery of the infants, one put forth a hand whereon the midwife tied a scarlet thread, saying this shall come forth the first, but he, drawing back his hand, the other came forth, and the woman said why is the partition divided for thee, and therefore called his name Phares, afterwards his brother came out on whose hand was the scarlet thread, and she called his name Zara." This case is of additional interest for it might appear from another interpretation of the text

that this is the first recorded case of complete rupture of the perineum, and as there is no further mention of Tamar, it is probable she died of puerperal sepsis.

There is only one other reference to twin labour and it gives one food for thought. It is in Gen. Ch. 25, v. 21-26, "and Isaac besought the Lord for his wife because she was barren, and He heard him and made Rebecca to conceive, and the children struggled in her womb and she said: "If it were to be so with me what need is there to conceive." The meaning of this is, that miscarriage or premature labour threatened, for obviously it was recognized that tumultuous movements of the fœtus with or without a "big belly" frequently anticipated premature labour or death of the fœtus. "And she went to consult the Lord and when her time was come to be delivered, behold twins were in her womb, he that came forth first was red and hairy like a garment and his name was called Esau, and immediately the other coming forth held his brother's foot in his hand and therefore he was called Jacob." One may therefore presume from this that the children were uniovular twins, somewhat premature, and not of great size seeing that Rebecca was a primipara and had been married some time.

I have often wondered if Esau was a freak of atavism, but in the light of modern endocrinology, I am inclined to think that here we have the first traditional examples of hyper- and hypo-adrenalism; for we read that "Esau became a mighty hunter and a man of the field," whereas "Jacob was a smooth man and dwelt in tents." what in the East to-day would be called a Babu.

In 11 Kings, Ch. 19, v. 3, it is obvious that uterine inertia was recognized as of grave omen to the women in labour for one reads: "This day is a day of tribulation, and of rebuke, the children are come to the birth and the woman in travail had not strength;" and again in Jer. Ch. v. 19, "she hath borne seven, is become weak and her soul hath fainted away."

In Gen. Ch. 35, v. 16, we have the tragic account of the death of Rachael. "And Jacob moved on in the spring-time, and was still some distance from Ephrath when Rachael felt the pains of childbirth, she had hard labour, but in the midst of her hard labour, the midwife said unto her: "Fear not, you are going to have another sor," and

“when her soul was departing for pain, and death was now at hand, she called the name of her son Benoni—the son of my pain.” One wonders much what her death was due to, for assuredly it must have been a bitter blow to Jacob after his long wait for Rachael. It is, I think, obvious that the presentation was normal, but the fact that labour came on while they were “on trek,” suggests prematurity, for the “chosen people” do not travel during the tenth lunar month. Possibly placenta prævia, morbus cordis, or toxæmia of pregnancy caused the unexpected onset of labour; but if eclamptic convulsions had occurred they would have been mentioned. It is not improbable that a fibroid tumour of the uterus with pregnancy may have been the cause, for in Gen. Ch. 31, v. 35, the text suggests that Rachael suffered from oldstanding dysmenorrhœa and menorrhagia; for Rachael states “let not my lord be angry with me that I cannot rise up before him, because it has now happened to me according to the custom of women.”

In I Samuel, Ch. 4, v. 19, there is a wonderful clinical picture of precipitate labour, associated with cardiac shock and fatal syncope, the result of sudden emptying of a big uterus; “And the wife of Phinehas was big with child, and near her time, and hearing the news that the Ark of God was taken and her father-in-law and her husband were dead, she bowed herself and fell in labour, for her pains came upon her on a sudden, and when she was on the point of death they that stood about her said to her ‘fear not, for thou hast borne a son,’ but she answered them not nor gave heed to them.” This wonderfully graphic description cannot fail to appeal to any obstetrician who has seen a case of cardiac shock, colossal post-partum hæmorrhage, or acute inversion of the uterus.

There is a curiously sinister and graphic description in Num. Ch. 5, v. 21, which can be interpreted in various ways, but I think the probabilities are in favour of general peritonitis, or acute hydramnios, for it is written, “if thou hast gone aside from thy husband and art defiled, the Lord make thee accursed and an example for all among His people. May He make thy thigh to rot, and may thy belly swell and burst asunder. Let the cursed waters enter into they belly, and may thy womb swell.”

In Job Ch. 38, v. 8, we find a picturesque description of sudden rupture of the membranes, which will remind

many students of their days on the district. The passage runs, "who shut up the sea with doors when it broke forth as issuing out of the womb."

Finally, it is interesting to note that there are no references to the pangs of childbirth being pleasurable, or easy. Among other quotations we have that of Gen. Ch. 3, v. 16, "I will make childbirth a sore pain for you, you shall have pangs in bearing, yet you shall crave to have your husband and he shall master you."

Women of Great Britain have to thank Queen Victoria who was the first to popularize the use of anæsthetics during childbirth and it cannot fail to be a matter of pride that the original chemical discoverer of chloroform (though it was first used by Sir James Simpson) was a member of this learned Society and lived here. I refer, of course, to David Waldie whose honoured bust is in your Hall.

PUERPERIUM.

It is curious to note that beyond the immediate death of Rachael, and the wife of Phinehas, and presumably Thamar, there are no references to anything that would indicate puerperal sepsis, although, as I have previously pointed out, the "obstetric hand" of Job Ch. 26, v. 13, would appear to suggest recognition of operative or manipulative midwifery.

Perhaps it was of such that it is written in Ecclesiasticus "Honour the physician for the need thou hast of him, for the Most High hath created him. The skill of the physician shall lift up his head, and in the sight of great men he shall be praised." It is not impossible, however, that the son of Sirach inferred the meddlesome midwife when he wrote the bathos, "He that sinneth in the sight of his Maker shall fall into the hands of the physician." But all the same, worthy or unworthy, a physician was entitled to his expenses or fees! *vide* Ex. Ch. 21, v. 19.

In the case of a male birth the puerperium lasted 33 days and coitus was forbidden before that date. In the case of a female child 66 days had to elapse before purification or coitus. No adequate explanation for this differentiation can be put forward.

GYNÆCOLOGY.

There are not many references to Gynæcology, though there are very exact rules, regulations, and medico-legal

enactments as regards rape, incest, consanguineous marriages and prostitution. One of the earliest and most characteristic stories of rape is in Gen. Ch. 34, with its tragically amusing sequel in verse 25, for this is the first reference to minor clinical surgery in the Bible: "The men of Shechem had consented to be circumcised in order to legalise the marriage of their chief to Dinah, whom he greatly loving had ravished": and it is written, "The circumcision was done on all the men, and behold the third day when the pain of the wound was greatest, the sons of Jacob entered boldly into the city and slew them."

Apart from the tragic side of the vengeance, this incident is of great gynæcological and sociological importance, for it creates a new point of view as regards women in ancient times. Throughout the world up till then, the neolithic idea of women, as so much property, existed; and compensation for injury to such property was all that was demanded. Here, however, we find that the idea of purity has entered the Hebrew mind, and a law is made imposing the death penalty for infidelity in marriage or for the seduction of an affianced girl. Moreover, the penalty of marriage is created, for a man, seducing an affianced girl, is compelled to pay her price and to take her for wife. From this we must assume that here we see the dawn of emancipation for women, for up till then they were steeped in an inferiority complex.

In the days of the Patriarchs a woman did not exist until she was married, and even then we have the instance of the wife of Joachim carrying the load of inferiority which was hers as a girl, though she was innocent of the charge of infidelity made against her.

The story of Judith and Holofernes indicates, perhaps, the degree of emancipation reached; and for those who are students of Schopenhauer, Otto Weiniger, or Ludovici, it will not come as a surprise that 2500 years ago there was shown for women a great contempt as well as a great respect. We find Ecclesiasticus urging "man not to be jealous of his wife but to keep his soul from her." "He is to beware of a woman who sings, he is to turn away his eyes from a beautiful woman, because beauty is a snare. He is not to look upon another man's wife. He is to fear wine and woman, for a woman is either a reward or a punishment."

The sin of Onan (Gen. Ch. 38, v. 10) would appear to foreshadow one of the present modes of birth control and to indicate "withdrawal." There is nothing in any of the texts to suggest that masturbation is inferred. It is obvious that such a method was considered an abomination, and was looked upon as unhealthy—as indeed it is for both parties. Moreover, up to the present day this and all such methods are taboo among orthodox Jews, wherefore they multiply.

Lastly, there is the well-known incident in St. Mark, Ch. 5, v. 25, which is so invariably quoted by Christian Scientists: "And a woman who was under an issue of blood Twelve years, and had suffered many things from many physicians, and had spent all that she had, and was nothing the better but rather the worse, when she heard of Jesus, came in the crowd behind Him and touched His garment, for she said: 'If I shall touch but His garment I shall be whole.' And forthwith the fountain of her blood was dried up and she felt in her body that she was healed of the evil. And He said to her 'Daughter, thy faith hath made thee whole, go in peace and be thou whole of thy disease'."

"Well ordered words are as the honeycomb,
sweet to the soul, and health to the bones,
and good instruction shall give grace."

The Debt of Western Medicine to Ancient India.

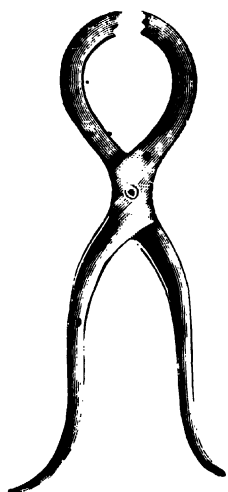
I think not many of you know, unless perhaps you have read Yeats Brown's "Bengal Lancer," that the foundation-stone of British influence in India was laid not by fire and the sword, but by that bond of sympathy and understanding which is associated with medicine, wherever it is practised. And so I will remind you that in the year 1645 Dr. Gabriel Boughten, Surgeon of the S.S. "Hopewell," was called to Delhi to treat the beautiful daughter of the Emperor Shah Jahan, when her life had been despaired of. Shah Jahan in gratitude asked Boughten to name his own reward and he replied that he wished for nothing except that his countrymen might be granted a piece of land on the river in Bengal. This piece of land was at Hooghly, now called Chinsura. On it was built a factory and then a fortification, and from this small beginning the British Empire in India arose.

When Boughten arrived in India the status of medicine was at its lowest ebb, incantations, charms and amulets having deluged the glories and achievements of the past. My object in addressing you to-day is to dispel any schoolboy ideas you still may have that Aesculapius and Hippocrates are the fathers of modern medicine; for if any of you care to read the original Sanskrit translations, you will find, as I have found, that there was an indigenous system of medicine in India of the highest order 1,000 years before Hippocrates, who as you know lived and wrote about 400 B. C.

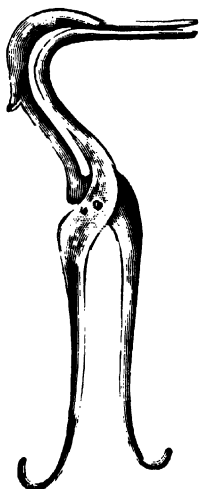
It is not possible to date the dawn of India civilization nor to state where the Aryan race had its birthplace; but from the studies of Philologists, it is certain that the ancient Vedas date from at least 3000 B. C., and it is from these Vedas that we, through the mist of Mythology, can discover the reality of existence in those days.

I will not weary you with long Mythological tables, but I will remind you of the legend that the great god Brahma wrote the Vedas for the guidance of the universe,

ANCIENT HINDU SURGICAL INSTRUMENTS.



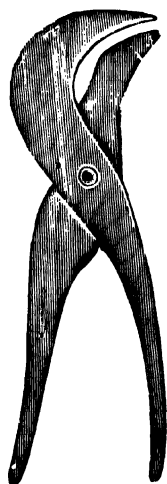
Lion Bone Forceps.



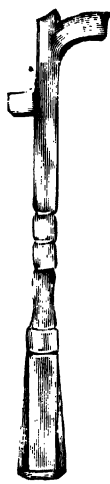
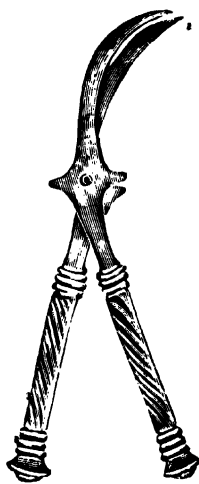
Ancient Hindu Ear Forceps.



Ancient Hindu Trocar's and Canulae.

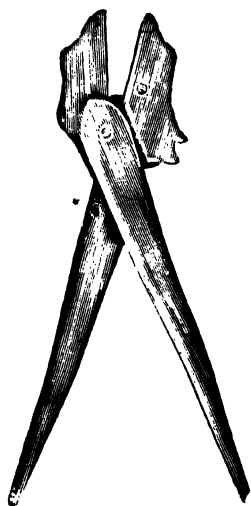


Ancient Hindu Bone Forceps.

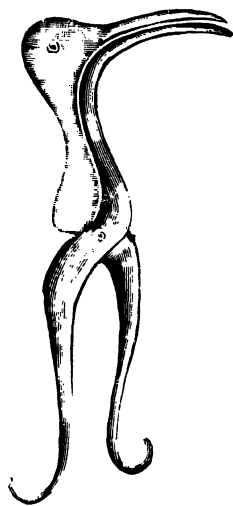


Ancient Hindu Cautery.





Wolf Skull Forceps.



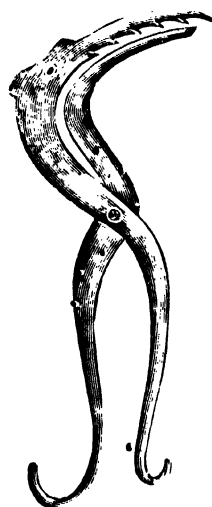
Curlew Ear Forceps.



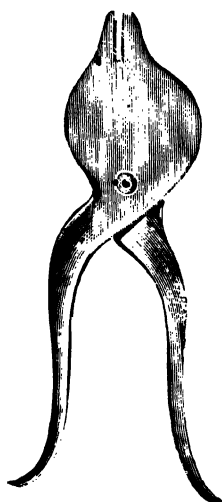
Cleft Plate
Knife



Ancient Hin
Cataract Kni



Crocodile Bone
Forceps.



Tiger Bone
Forceps.



Ancient Hindu Long Toothed
Forceps.



and the greatest of these was the Atharva Veda, and then Brahma, taking compassion on sick and suffering man, sought to produce the Ayur Veda, which is a treatise on the science of life. This Ayur Veda is the foundation-stone of Hindu Medical Science.

After this Brahma created Dhanwantari, the father of medicine, to minister to the misery and disease of mankind and instruct them in the science of life, and just as sages came in later centuries to Hippocrates, so in those early days deputations were sent to Dhanwantari for instruction, and amongst the greatest of those deputies were Susruta and Charaka.

The story runs that on their arrival Dhanwantari asked his pupils "on what shall I first lecture" and they answered "on surgery" because there were no diseases amongst the gods, and wounds were the first injuries that required treatment.

This reply will, I am sure, interest Christian scientists, for disease then, as now amongst them was looked upon by the ancients as a retribution on fallen mankind for its sins.

The Ayur Veda was divided into eight parts, two treating of surgery, five of medicine and one of the elixir of life. Susruta, whose books are still existent, based his principles of surgery upon the Ayur Veda and added to them his own clinical experience.

Thus began the Golden Age of Hindu Surgery, and to give you some idea of the extent of his knowledge, experience and surgical technique, I have asked Mrs. Clark of Kurseong, a distinguished artist, to draw for you a few out of the great number of instruments which were used by Susruta, and then I shall pass round the same instruments in their present form as we use them to-day, and I think you will then agree that we owe a large surgical debt to the ancients of India.

Susruta taught that the foundation of surgery was anatomy and made his pupils do dissections. In those days there was no Brahmin ban upon touching a corpse, for we see in the laws of Manu 1200 B. C. that the code states that "mere bathing will purify after touching a corpse, while to stroke a cow, or gaze at the sun, if the mouth be sprinkled with water, will remove defilement due to the touch of a dead bone."

To Susruta we owe the discovery of cataract couching, trephining, skin-grafting, rhinoplasty and scarification. From him we learn that there was quite a precise knowledge of midwifery and of the positions occupied by the baby in utero. Moreover, post-mortem Cæsarean section is spoken of, and it is stated that the expectant mother must be kept in a happy frame of mind and in placid surroundings. Again, limbs were amputated, tumours removed, ruptures reduced and patients were cut for stone. There is also mention of artificial limbs made of iron, and still more remarkable is the fact that rules are laid down for the operating room; for it is written "that it should be fumigated with sweet vapours, the surgeon is to keep his hair and beard short, his nails clean and wear a clean sweet-smelling dress." It is not certain what drug was used, but directions are given that a patient was to inhale a substance called Sammohini before operation. In those days the two great Universities of India were at Benares on the Ganges and Taxilla on the Jhelum.

Having spoken of their surgical skill it is now time to see what they knew of medicine, and this we learn from the writings of Charaka. He flourished about 400 B. C. and wrote eight books. He describes fevers, leprosy, mania, epilepsy and nearly every disease we meet with in common practice to-day. The 7th book details 400 purgatives and their uses. He classifies food and diet according to disease; and tries, like Freudians, to analyse the secret of dreams. Charaka writes of the benefit of steam baths and of stramonium cigarette smoking for asthma. The properties of *nux vomica* were known for paralysis and dyspepsia.

There can be no question that toxicology was understood, for we read in the story of the invasion of India by Alexander the Great, that his Greek physicians being useless, the Emperor collected around himself the most prominent of the Hindu doctors for dealing with snake bite and tropical diseases.

There is an interesting chapter on climatology and patients are advised, according to their disease, to sojourn in such climates as were suitable for them. The ritual of oral cleanliness is looked upon as of the first importance; and although tooth brushes did not come into Europe until about 1700 A. D., it is remarkable to read that in

the days of Charaka regulations existed for the selection of twelve distinct types of tooth brushes and tooth powders. Some of these tooth brushes, as they are used to-day, I am handing round to you.

• By now I think I have justified my claim that Western medicine owes a considerable debt to Ancient India, and judging by ancient literature there can be no question that this obligation was appreciated by the West.

In those early days you must remember there was little writing, and all learning was carried from mouth to mouth by the nomadic tribes as they spread Westwards along the great routes to Syria, Palestine and thence to Greece.

In our Bible, for instance in the books of Esther and Ezekiel, there is mention of caravan trade with India in such articles as "ivory and ebony," "cassia and calamus," "brodered work and rich apparel." Moreover, the recent discoveries of Sir John Marshall at Taxilla demonstrate that so long ago as 3000 B. C. there was considerable intercourse, both in trade and culture, between the people dwelling in North-West India and those of Babylonia and Egypt. That being so, it is certain that these traders carried with them also a knowledge of things medical and surgical: for we know that Hippocrates came to India to visit the sages and we learn from the writings of Galen, Pliny and Dioscorides how greatly the medical wisdom of India was appreciated. Indeed, the term *Indi dixunt* was used by Roman doctors as a password denoting excellence.

If such was the greatness of Indian skill and knowledge before Christ, what was the reason of its decay? History tells us that it was the rise of pure Brahmanism with the desire of the priests to hold all power in their own hands. For instance, we read that in order to curtail the influence and power of the surgeon they ruled that all who took food from or were touched by a surgeon became unclean and they forbade all shedding of blood. Moreover, in order to enhance their own majesty, the priests innovated the treatment of all disease by suggestion, mantras and incantations, doing all they could to hinder the progress of surgery and put back the clock of medicine. Later again we have the growth of Buddhism, which passed like a

flood-stream over India, keeping the clock of ignorance, from a surgical point of view, ticking for hundreds of years, for the teaching of the Buddha prohibited the use of a knife, and any form of surgery or dissection. On the other hand, we must be fair to the Buddhists, for to them India and the whole world owes a great debt from a sanitary, medical and veterinary point of view; for we read that so long ago as 300 B. C. the Buddhists established a system of State physicians, one physician being appointed for every ten villages on the great roads of India.

They laid down laws regulating burials, sanitation and prohibited adulteration of food. They established botanical gardens for the special supply of herbs and drugs for medical use. They built bird and animal sanctuaries, and even animal hospitals, with a reverence worthy of St. Francis of Assisi. Traces of these animal hospitals can still be seen in various parts of India, particularly amongst the Jains, and then history shows us how all the virtues of wisdom and learning subsided and were forgotten in the tide of war which swept from one end of India to another with the coming of the Moslem conquerors about 700 A. D. and onwards. Brahminism, Buddhism and the fragments of remaining knowledge of medicine and surgery were scattered and lost in the general turmoil. The conquerors introducing, *via* Moslem hakims, their own system of degenerate medicine, Hindu doctors being only considered as spell-makers. And so conditions continued until the coming of Europeans. First the Portuguese, then the Dutch, then the French and then the English striving for supremacy.

Is it surprising that the clock of medicine and surgery stood still and that these Europeans marvelled at the lack of the minutest surgical skill among the people of India? But given the benefits of peace and encouragement, I think it is extraordinary to observe the progress made by Indians during the last 100 years. Progress that may again produce great surgical initiative, let us hope, throughout India.

In this connection perhaps you will allow me to remind you that it was in this city in the year 1896 that a new epoch began, for a Bengali, named Madhu Sudan Gupta, inspired by the fact that surgery must be based on anatomy, gathered together ten students who were willing to risk caste excommunication by beginning dissection on the

human body. Dr. Gupta's centenary deserves to be remembered, for it is interesting to read in the annals of Calcutta that so incensed against him and his disciples were the Hindus of Calcutta that the dissecting-room was specially built near the site of the present Medical College of Calcutta with very thick and high walls, specially protected by a strong police guard. Dr. Gupta and his disciples were not only pioneers, but revivalists of a system of study first advocated and countenanced by Susruta and Brahmin 1000 B.C.

Verily, in the words of Ecclesiasticus, "Honour the physician for the needs thou hast of him, for the Most High has created him."

Tropical Diseases in Shakespeare.

Two years ago I had the honour of speaking to this Society of the medical lore found in the Bible. To-night I am hoping to interest you in some aspects of medicine portrayed by Shakespeare.

I expect that most of you are aware that books have been written suggesting that the Bard of Avon was lawyer, soldier, courtier, gardener or astronomer, and yet such was his genius that I hope almost to persuade you that he was a doctor.

In the thirty-six plays mention is found of practically all the diseases and drugs known in this time, and in *Troilus and Cressida*, V. i., you will find a long list of such ills as the flesh was then heir to. But quite apart from such record, it is astounding to discover the wonderful knowledge of physiology, pathology, and psychology to which the plays bear witness. Let us acclaim him in his own words: "How noble in reason, how infinite in faculty, in apprehension how like a god."

William Shakespeare was born on 23rd April, 1564, and died on the anniversary of his birth in 1616, that is, twelve years before Harvey published to the world his momentous discovery of the circulation of the blood. But it should be remembered that for thirty years the poet was mixing constantly with the keenest brains of the realm, both in and out of London on his theatrical tours, and that that was the glorious Elizabethan age when merchant venturers, fired by the voyage of Hakluyt and "the new map with the augmentation of the Indies" (*Twelfth Night*) were seeking trade facilities with the distant West and East.

Surely then it needs but little imagination to picture the returning wanderers in the convivial company of Shakespeare and his player friends at the Mermaid, exchanging their tales of courts, courtesans and countries.

Those were the days of the Renaissance of Medicine as of Art, when such famous men as Fallopius, Vesalius, Fabricius, Columbus and Montanus had begun scientific

* A paper read before the Medical Section of the Asiatic Society of Bengal on 20th January, 1930.

dissection of the cadaver, and it is by no means improbable that Shakespeare heard of these men, or saw engravings of their discoveries in some London printing house with which he was in close touch throughout his life. Nor, in assessing his knowledge of medicine, must it be forgotten that his eldest daughter Susannah married Dr. John Hall in 1607, and that therefore some of his wealth of clinical observation may be attributed to this close association with one of the profession, although the greater number of his plays were written before that date.

In the thirty-six plays, seven regular physicians are mentioned but, be it noted, no surgeon, except it be that Dick Surgeon in *Twelfth Night*, who was so intoxicated that he could not attend his duties. You will remember the lines—

“ Didst see Dick Surgeon, sot ? ”

“ Oh, he's drunk Sir Toby, an hour ago, his eyes were set at eight in the morning. He's rogue.”

At that time, besides physicians licensed to practise by the College of Physicians or Company of Barber Surgeons, there were a host of quacks, both male and female, allowed by Act of Parliament in 1543 the liberty to practise, “ if they had knowledge and experience of the nature of roots, herbs and waters, and of the operation of the same.” As instances of these, you will remember Dr. Pinch in *The Comedy of Errors*, Friar Laurence in *Romeo and Juliet*, the female water caster in *Twelfth Night*, Helena in *All's Well that Ends Well*. It is possible that Shakespeare also put Dr. Caius in *The Merry Wives of Windsor* in this category, for when the learned doctor boasts of his surgical skill and threatens to remove the testicles of Sir Hugh Evans for interfering with his love affairs, he is dubbed “ belly stale,” “ a Castalian King Urinal ” and “ Monsieur Mockwater,” though I must say I have a liking for that one small meed of praise he earns from the innkeeper,

“ Shall I lose my doctor ? No, he gives me the potions and the motions.”

DISEASES MET WITH IN THE TROPICS.

Malaria.

In the lowlying and undrained areas of England malaria was more or less endemic in the days of

Shakespeare, consequently it is not surprising to find in his plays numerous references to this disease. The general opinion in those days—which held till the discoveries of Laveran and Ross—was that malaria arose from inhaling the miasma of sun-warmed swamps, for in the *Tempest*, II. ii., Caliban says:

“ All the infections that the sun sucks up
From bogs, fens, flats, on Prosper fall
And make him by inchmeal a disease ; ”

and again in *Julius Caesar*, II. i.

“ Is Brutus sick, and is it physical to walk
unbrac’d, and suck up the humours
Of the dark morning.
To dare the vile contagion of the night,
And tempt the rheumy and unpurg’d air,
To add unto his sickness ; ”

and in *King Lear*, II, iv.

“infect her beauty
You fen-sucked fogs, drawn by the powerful sun
To fall and blast her pride.”

Further, in *Timon of Athens*, IV. iii.

“ O blessed breeding sun, draw from the earth
Rotten humidity, below thy sisters orb
Infect the air.”

The various clinical types of fever are recognised in several places. For instance in *Henry V*, II, i., Dame Quickly speaks of Falstaff as

“ So shaked of a burning quotidian, that it is most lamentable to behold.”

In *Richard II*, II. i., we read of the death of John of Gaunt

“ presuming on an ague’s privilege ”

also in *Julius Caesar*, I. ii., we have reference to the rigor, pallor, and wasting after malaria in the lines

“ When the fit was on him I did mark
How he did shake, his coward lips
Did from their colour fly,
And that same eye did lose his lustre, I did
hear him groan.
And that tongue of his, alas it cried
Give me some drink, Titinius.”

also in *II. ii.*

“ Cæsar was ne’er so much your enemy
As that same ague which hath made you lean.”

In *The Tempest*, *III. ii.*, the delirium of malaria is described

“ He is in his fit now, and doth not talk
after the wisest ”

and in *As You Like It*, *III. ii.*, there is that beautiful metaphor

“ He seemed to have the quotidian of love upon
him, he that is so love shak’d.”

It is interesting to note that in *Troilus and Cressida*, *III. iii.*, Shakespeare recognised that an attack of ague might be precipitated by exposure to the sun—insolation—for we have the lines

“ And danger, like an ague subtly taints
Even then when we sit idly in the sun.”

Plague.

There are innumerable allusions to the plague, for it must be remembered that in the poet’s day the City of London was rarely free from this disease. In the various references to the pestilence, it is difficult at times to know whether the poet inferred bubonic plague or typhus, for both diseases were equally common and may frustrate diagnosis even to-day. For instance, in *Coriolanus*, *IV. i.*

“ Now the red pestilence strike all trades in
Rome, their occupations perish.”

and in *The Tempest*, *I. ii.*

“ The red plague rid you for learning me
your language ”

and in *Troilus and Cressida*, *II. i.*

“ A red muffrain on thy jades tricks ”

and in *iii.*

“ He is so plaguey proud, that the death
token cry ‘No recovery.’ ”

Whatever the actual disease, it is obvious that it was then recognised as being very infectious, for in *Twelfth Night*, I. iv., we read

“ Even so quickly may one catch the plague ”
and in *Richard II*, I. iii.

“ Suppose devouring pestilence hangs in our air,
And thou art flying to a fresher clime.”

In this connection it is of great interest that Shakespeare should refer to two methods of treatment which were as common then as they are in the East to-day, for in *Coriolanus*, III. i., we read of segregation in the case of infectious diseases

“ Pursue him to his house lest his infection,
being of catching nature, spread further.”

whereas in *Romeo and Juliet*, V. ii., infected individuals are forcibly interned in their own house

“the searchers of the town
Suspecting that we both were in a house
Where the infectious pestilence did reign,
Sealed up the doors and would not let us forth.”

Finally, while speaking of quarantine, perhaps you will allow me to quote Shakespeare's dear thought of England and his appreciation of our island home being segregated from the external world, in those lines from *Richard II*; II. i.

“ This fortress built by nature for herself,
Against infection and the hand of war.”

Dysentery.

There are but few allusions to this malady, which, considering the many scenes of camps and battle, is perhaps remarkable, but there is the following line in *Titus Andronicus*, III. i.

“ My bowels cannot hide her woes,
But like a drunkard must I vomit them ”

and in *Troilus and Cressida*, II. ii.

“ No lady of more softer bowels, more spongy
to suck in the sense of fear.”

I have often wondered why some modern pill vendor, or patient with chronic constipation has not adopted Hamlet's words

"For this relief, much thanks."

Anaemia.

We have noted the pallor which the poet associated with malaria, but it is obvious that he had observed chlorosis, or secondary anæmia of women, as a thing quite apart from the same condition in men, for in *Twelfth Night*, II. iv., we have those beautiful lines

.....she never told her love
But let concealment like a worm i' the bud
Feed on her damask cheek, she pined in thought
And, with a green and yellow melancholy,
She sat like patience on a monument
Smiling at grief "

and in *Romeo and Juliet*, IV. i., the still more beautiful lines

"The roses in thy lips and cheeks
Shall turn to paly ashes."

Whereas in *Henry IV*, Part 2, IV. iii., Falstaff refers to male green sickness in words which are, I think, of particular interest to us in Bengal

"For thin drink doth so overcool their blood, and making many fish meals they fall into a kind of male green sickness, and then when they marry they get wenches. They are generally fools and cowards, which some of us should be, but for inflammation."

And in *Anthony and Cleopatra*, III. i., we read

"And Lepidus is troubled with the green sickness."

Consumption.

*First we have those lovely lines in *A Winter's Tale*, IV. iii., which are so peculiarly applicable to the zenana world of India

".....pale primroses
That die unmarried, ere they can behold
Bright Phoebus in his strength, a malady
Most incident to maids."

and then, in *Troilus and Cressida*, V. iii., the wasting of consumption, as possibly complicating syphilis or malaria is described

“ A whoreson ptisick, a whoreson rascally ptisick so troubles me, and I have such an rheum in mine eyes and ache in mine bones, that unless a man were cursed, I cannot tell what to think on it ”

again, in *A Lover's Complaint* we find a reference which may be construed to mean the foetid breath of the consumptive,

“ Oh, that sad breath his spongy lungs bestowed.”

Hydrophobia.

It is obvious that this was well known to follow the bite of a rabid dog, for in *The Comedy of Errors*, V. i., we have the lines

“ The venom clamours of a jealous woman,
Poison more deadly than a mad dog's tooth.”

Pyorrhœa.

I expect most of you are aware that the modern tooth brush came into fashion about 1700. Prior to this little care was taken of the teeth except perhaps the occasional use of the stick customary in India to-day. It is however probable that caries was rare in those days because of breast feeding, a full vitaminic diet and the scant use of knife and fork, but there can be little doubt that pyorrhœa did exist, for we have lines in *Coriolanus*, II. iii.

“ Bid them wash their faces and keep their
teeth clean,”

and in *Julius Caesar*, I. ii., Casca says

“ The rabblement uttered such a deal of
stinking breath.”

Moreover you will remember in *The Merry Wives of Windsor*, Falstaff speaks of “ kissing comfits,” which refers to a custom of taking perfumed cachous to sweeten the breath, a habit referred to in *Romeo and Juliet*, I. iv,

“ Because their breaths with sweetmeats tainted are.”

In the epilogue to *As You Like It*, it would appear that halotitis was unpleasantly common in Elizabethan days, for Rosalind says

“ If I were a woman I would kiss as many of
you as had breaths that I defied not.”

Finally, we have those caustic lines in the 130th Sonnet which Mr. G. B. Shaw observes is such anathema to women,

“ And in some perfumes is there more delight,
Than the breath that from my mistress reeks.”

Syphilis.

There are so many references to this malady under various titles, such as “the French disease,” “the rotten disease of the South,” “the Neapolitan disease,” that I need not detail them, except perhaps in the interests of syphilographers to say that the most arresting are to be found in *Hamlet*, V. i., *Measure for Measure*, I. ii., *Henry V*, II. ii., and *Timon of Athens*, IV. iii.

Incontinence of Urine.

You are all aware that this is a condition often seen in children and prostatic old men, but perhaps not many of you know that Shakespeare mentions the fact—which is corroborated by Ben Jonson in his play *Everyman in His Humour*, and is vouched for by the Hon. Robert Boyle—that it is proverbial that the music of the bagpipes has the power to produce enuresis. Here are the lines in *The Merchant of Venice*, IV. i.

“ Some men there are that love not a gaping pig,
Some that are mad if they behold a cat,
And others, when the bagpipes sing in the nose
Cannot contain their urine.”

Ben Jonson's lines are

“ What ails thy brother? Cannot he hold his
water at the reading of a ballad?”
“ Oh no, a rhyme to him is worse than cheese
or a bagpipe.”

Goitre.

Shakespeare, living in Stratford, must have seen many cases of Derbyshire neck which was doubtless as common then as it is in the Darjeeling hill tracts to-day. Therefore I am sure these lines in *The Tempest*, III. iii., will appeal to you

“Who would believe that those were mountaineers,
Dewlapp’d like bulls, whose throats had hanging
At them wallets of flesh.”

Pruritus.

It is obvious that scabies was known and its cause understood, for in *Romeo and Juliet*, I. iv., we have the reference

“Not half so big as a round little worm,
Prick’d from the lazy finger of a maid”

and again in *The Tempest*, II. ii.

“Yet a tailor might scratch her where’er she
did itch”

and in *Coriolanus*, I. i., Marcius says

“What’s the matter, you licentious rogues, that
rubbing the poor itch of your opinion, make yourselves
scabs.”

Diagnosis by the Appearance of the Urine.

This is probably one of the very oldest methods of diagnosis, and as you are aware it still exists in the East amongst Ayurvedics and the followers of the Baghbat. In Shakespeare’s time this custom was called “water casting,” and there are many references to it throughout the plays. Perhaps the best known occurs in *The Two Gentlemen of Verona*, II. i.

“These follies shine through you like water in a
urinal, that not an eye that sees you but is a physician
to comment on your malady.”

Diet.

I feel sure that my Hindu and vegetarian friends will feel complimented by the lines in *Twelfth Night*, I. iii.

“ I am a great eater of beef, and I believe
that does harm to my wit ”

to which Sir Toby feelingly replies

“ No question about it ”

but they should mark well the words of Longaville in *Love's Labour Lost*, I. i.

“ Fat paunches have lean pates, and dainty bits
Make rich the ribs, but bankrupt quite the wits.”

On the other hand, in *Julius Caesar*, I. ii., the folly of asceticism is described as follows :

“ Let me have men about me that are fat,
Sleek headed men and such as sleep o' nights,
Yon Cassius has a lean and hungry look,
Such men are dangerous.”

In *The Comedy of Errors*, V. i., there is good advice for doctors and students, who as you know, due to hurried and irregular meals, are prone to suffer from indigestion and duodenal ulcer, for it is written

“ Unquiet meals may give you indigestion.”
and in *Macbeth*, III. iv.

“ Let good digestion wait on appetite, and
health on both.”

For those who are romanticists I like the words of Speed in *The Two Gentlemen of Verona*, II. i.

“ Though the chameleon love can feed on air I am
one that am nourished by my victuals, and would fain
have meat.”

To show you in India, Shakespeare's appreciation of the importance of a clean milk supply, surely there is nothing to equal Launcelot's remark in III. i. of the same play

“ She can milk, look you, a sweet virtue in a
maid with clean hands.”

Speaking of public health, it is of more than ordinary interest to find that even so long ago as the days of

Shakespeare, flies were looked upon as carriers, for in *Romeo and Juliet*, III.^o iii., we have those beautiful lines

“more courtship lives
In carrion flies than Romeo, they may seize
On the white wonder of dear Juliet’s hand
And steal immortal blessing from her lips.
Flies may do this, when I from this must fly.”

Alcohol. .

Merrie England in the days of Shakespeare was well noted for its beer-drinking propensities, *vide Othello*, II. iii., but it is doubtful whether the mead and hop grown beer did much harm. The poet-actor-manager lived in convivial times, therefore it is a pleasure to read in *Henry VIII*, I. iv.

“ Good company, good wine, good welcome,
Can make good people ”

but I think our Scotch and American friends respectively will appreciate the lines in *Othello*, II. iii.

“ Come lieutenant, I have a stoup of wine.”

“ Not to-night good Iago, I have a very poor and unhappy brain for drinking. I could well wish courtesy would invent some other form of entertainment ”

but I doubt if even a Scotsman would accept the advice of Falstaff in *Henry I V*, Part 2, IV. iii.

“ If I had a thousand sons the first human principle I would teach them would be to forswear a thin potation and addict themselves to sack.”

Mental Disorders.

Nothing illustrates the genius of William Shakespeare as well as his reading of the mind with the causation and development of mental diseases. To those who are particularly interested I may refer them to the book of Dr. John Bucknill published in 1867 on *The Mad Folk of Shakespeare*. For our purpose it will be sufficient to remind you that “ *Othello* ” and Julius Cæsar suffered from epilepsy, which in the latter play Brutus calls “ the falling sickness.”

In *King Lear*, II. iv., we have the curious reference to *hysterica passio*, and in *Troilus and Cressida*; II. iii.

Ulysses describes the symptoms of Achilles in words which seem to indicate his disease as incipient general paralysis of the insane.

The tragedies of Macbeth and Hamlet portray a knowledge of psychological medicine without parallel in literature, and those of you who have had occasion to be called to such a case will appreciate the words of the canny Scotch doctor in *Macbeth*, III. i.

“ This disease is beyond my practice, I think but dare not speak, more needs she the divine than the physician ”

as he discreetly tries to pass her on to the confessional. Moreover, I like to think that that same canny doctor perhaps originated the Rule of the Commissioners of Lunacy that we should record a patient's own words as evidence of mental instability, for you remember he says

“ I will set down what comes from her to satisfy my remembrance the more strongly.”

There seems little doubt that Shakespeare foreshadows the principles of modern psycho-analysis in those famous lines

“ Canst thou not minister to a mind diseased,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain
And, with some sweet oblivious antidote,
Cleanse the clogg'd bosom of that perilous stuff
Which weighs upon the heart ?”

and I feel that the authorities of all mental hospitals will rejoice that the proper treatment of mental diseases can be credited to his genius, for in *Much Ado About Nothing*, V. i., we read

“ Fetter strong madness in a silken thread,
Charm ache with air, and agony with words.”

There are many other references to melancholia and mania in the plays, for instance in *The Comedy of Errors* and *King Lear*, but it is worthy of note that the poet urges the physician to be sanguine even in the most anxious moments, for in *Love's Labour's Lost*, V. ii., we read

“ Then you perceive the body of our kingdom
How foul it is, what rank diseases grow
And with what danger near the heart of it ”

“ It is but as a body yet distempered,
Which to his former strength may be restored
By good advice and little medicine.”

“ This music mads me ; let it sound no more ;
For, though it have help madmen to their wits,
In me, it seems, it will make wise men mad.”

"..... We are all diseased
And, with our surfeiting and wanton hours,
Have brought ourselves into a burning fever,
And we must bleed for it."

“ Ah ! cut my lace asunder,
That my pent heart may have some scope to beat.”

However, it is nice to read in *The Comedy of Errors* that Dr. Pinch had a good bedside manner. The line reads

“ Give me your hand and let me feel your pulse.”
And the description of a lady's voice

“ Her voice was ever soft,
Gentle and low, an excellent thing in woman.”

Although the poet seems to appreciate the effect of the recent festive season in the line

“ For my voice I have lost with holloaing and
singing of anthems ”

It is obvious that Shakespeare was well aware of the benefits of fresh air, for we read such lines as

“ The most wholesome physic of thy health
giving air.”

“ The air is quick and it pierces and sharpens
the stomach.”

“ There's fresher air my lord in the next chamber,
Lead in your ladies.”

Finally, let us not forget those words

“ Our remedies oft in ourselves do lie,
Which we ascribe to Heaven.”

The poet's estimation of a patient's gratitude is as true to-day as three hundred years ago

“ Blow, blow thou winter wind,
Thou art not so unkind
As man's ingratitude.”

But, remember he does not overestimate the help of medicine, for we read

“I consider
By medicine life may be prolong'd, yet death
Will sieze the doctor too.”

Prognosis.

It is said of Sir William Osler that he never saw a patient, however desperately ill, without leaving behind him an atmosphere of hope. The same idea is to be found in *Anthony and Cleopatra*, II. v.

“ Though it be honest, it is never good
To bring bad news ”

for we read in *Henry IV*, Part 2, I. i.

“He that but fears the thing he would not know,
Hath by instinct knowledge from others eyes
That what he feared is chanced.”

It is worthy of note that the poet well understood the importance of the previous history of adjudging disease, for in *Henry IV*, Part 2, III. i., we read

“There is a history in all men’s lives
Figuring the nature of the times deceased,
The which observed, a man may prophesy
With a near aim, of the main chance of things
As not yet come to life.”

Gentlemen, the time allotted me is coming to an end, and you remember what Lord Say remarked in *Henry VI*

“Long sittings to determine poor men’s causes,
Hath made me full of sickness and diseases.”

Nevertheless, I trust you will not think of me as

“A fellow of infinite jest and most excellent fancy”
who

“waxes desperate with imagination,”
but rather believe that

“My endeavour has been
To frame your mind to mirth and merriment,
Which bars a thousand harms, and lengthens life,”

and so

“Give me commendation for my free entertainment.”

I know I have but touched upon the fringe of this great subject and my thesis is but a thing of “shreds and patches,” but if I have awakened fresh interest in the world’s greatest poetic genius, I shall consider myself sufficiently rewarded.

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The Debt of the Fine Arts to Medicine.

The conception of this address arose some years ago from the casual remark of an Italian gynæcologist in Rome as we were looking from his hospital towards St. Peter's. He said: "I wonder if you realise that Michael Angelo planned out that mighty Dome from his intimate anatomical knowledge of the human frame." That chance sentence fired my imagination and ever since, as an enthusiastic reader, I have made pencil or mental note of any matter that threw light upon the debt of the fine arts to medicine; for as most of you are aware, there is hardly a distinguished artist, author, sculptor or poet who does not owe some portion of his fame to an intimate knowledge of the science of life and medicine.

This is perhaps not so curious when you come to consider that every great artist and physician possesses the same splendid faculties of observation, imagination and the desire to reproduce, by pen or picture, the things seen.

To appreciate this let me digress for a moment to remind you that from the earliest times—for instance, from the days of the Cromagnon Cave men painting was the first means used by man (if we are to except speech and, possibly, poetry) to express the wondrous phenomena around them; and you can still see the actual paintings of those primitive people depicting the mystery of life and death, pain and disease, in Southern France.

Later, as civilization grew the art of sculpture—an art far higher than that of painting—began to develop, and you have only to look back to the records of ancient Assyria, Egypt and Greece to verify the glories of their attainment and sense the fascination that suffering and injury had to workers in pottery and marble; for instance, the Elgin Marbles in the British Museum, which are said to be the work of Pheidias (500 B.C.), or the "Laocoon," the "Dying Gladiator," and "The Wrestlers."

However, coming to more recent times, it is hardly necessary for me to remind you of the conspicuous place that things medical occupy throughout the art galleries of Europe; for the artist expressed what he saw, what he felt, or what he admired, with the object of

either exciting sympathetic emotion or compelling contrast, using pathological ugliness in one part of his picture, to enhance the beautiful in another; for contrast, according to Leonardo Da Vinci, is essential in a work of art.

To illustrate this particular point, those of you who know your London can have no better example than Hogarth's greatest picture—"The Pool of Bethesda" outside the Great Hall of St. Bartholomew's Hospital.

But please do not think that my object is to detail such morbid beauty as is to be found in the great masters, for that you can do for yourselves in any gallery in Europe, for just as a tinker, tailor, soldier, sailor may expertly criticise a painting, so a doctor likes to see medical details depicted accurately, and abhors Epstein's *Genesis*.

No! my object is to show you how indebted we all are to the fact that so many masters of the fine arts to-day and in the past were students of medicine or anatomy.

I have briefly referred to Praxiteles and Pheidias, whose masterpieces of acute observation in marble and bronze stand immortal as monuments of Hippocratic vision. They were able to reproduce all the subtle contours indicating life and action with a truth that was more than science—it was inspiration. But we will pass from them through the barren dark years of sixteen centuries to the Renaissance and consider the first exemplar of my thesis—Leonardo Da Vinci; for thanks to one of England's greatest doctors, William Harvey, who discovered the circulation of the blood, we have in Windsor Castle a great number of his drawings which illustrate my point.

Leonardo Da Vinci (1451—1519), sculptor, artist, architect, scientist, poet and musician, was the illegitimate son of a notary. He tells us that when art first engrossed him he realized the importance of studying the cadaver and so, mostly working by candle light in the mortuary of Santo Spirito in Rome, he dissected over thirty bodies of old and young people doing this for Art's sake that he might calculate the force and beauty of the human frame.

I like to think that it is perhaps to Leonardo Da Vinci that we owe the aphorism "we are as old as our arteries," for he relates how he dissected the blood vessels of an old

man of a hundred and then those of a child of two, comparing and portraying them.

He held that every motion was expressed by every fibre of the body and that as a result every muscle should be known by the artist who would become supreme. The best example we have of this dictum is of course the picture of *Mona Lisa*—that wonderful portrayal of a sensuous syren which depicts the exquisite play of 36 muscles of the face. Indeed, his disciple Marc Della Torre stated that “Leonardo—the anatomist of love—knew every minute fascicle and nerve around the mouth and eye and so could, as if playing on a musical string, denote that sensuous pleasure about her eyes which fades sweetly to the corners of her mouth.”

Leonardo Da Vinci is a study in himself. He took infinite pains and was absolutely absorbed by the created wonder of the human form. For example, look at his wonderful drawings of the unborn foetus in its “crystal cabinet,” as he called it, and his depiction of the valves of the human heart. He lived alone and has been called “the ascetic erotic,” but without his studies in anatomy grimly pursued in that dark candle-lit mortuary, the world would never possess his “Last Supper,” “Mona Lisa,” “St. Ann” and “Judas” which are perhaps the most famous of his works.

His note-books abound in records of observation, in mirror writing, made for their bearing on a better technique and for the improvement of his artistic accuracy. He confined himself to the two faculties: artistic ability and keen observation. Having seen a skeleton he not only portrays each bone, but must enquire into its structure. Having seen a muscle he must enquire as to its individual action, and then not content with having more than covered surface anatomy, he extends his studies to the heart and its mechanism, to the digestive system and its functions, to the activities of the brain, to the organs of generation and to the growth of the child within the womb. In short, science predominates over art as he seeks for a solution of the mysteries of life and death. Nevertheless, we can safely say that Leonardo Da Vinci uplifted the science of descriptive anatomy to a level as high as that of the art of painting.

It was Kalif Ali, the son-in-law of Mohammed the Prophet, who first remarked "men are more like the times in which they live than they are like their fathers." And we realize how true that saying is when we think of the Renaissance with its spate of geniuses, for Michael Angelo was born 20 years after the birth of Leonardo Da Vinci and just like his great predecessor, we read that Michael Angelo devoted the early years of his artistic development to dissections in the mortuary of a monastery in Florence—and often he speaks gratefully of the Prior whom, by permitting these dissections, enabled him, with extreme accuracy, to model in marble his Crucified Christ in the Florence Cathedral, and the gigantic statue of David.

Michael Angelo and Leonardo Da Vinci, though opposites in temperament, were very much alike in their methods and views; for they both eschewed women and were confirmed bachelors, preferring always to represent the beauty of the male rather than that of the female. Indeed, there are only three women depicted in the whole range of his work out of over 150 nude males in stone and paint.

Michael Angelo, too, is a curious psychological problem; for turning his back on earthly love, he preferred to create such forms as conveyed the idea of yearning rather than that of fulfilment. There is a great charm about this irascible genius and his laying down of the law to popes, statesmen, contractors and disciples. For instance, listen to his tirade when Pope Pius IV brought him to Rome to criticise the plan for the construction of St. Peter's. "Your Holiness, outlaws will conceal themselves, coiners ply their trade, nuns be ravished, and every other kind of villainy take place, so that at closing time it will need 25 men to search the place, if you permit this plan of Gallos to go on."

Fortunately for the world, the Pope did listen, and commanded the irate Michael Angelo to do what he thought fit, and we have it in his own writing that for two weeks he hid himself and constructed, in that short time, his model of St. Peter's; for beyond all else the immense mass of the Dome appealed to his creative instinct, knowing as he did that he could transfer his knowledge of the human frame to this unknown field and in so doing devise and create a new art of anatomy,—the Dome of St. Peter's being one of the most supreme architectural wonders of the world.

Michael Angelo again and again used to din into his disciples that "drawing is the fountain head of all painting, the root of all technique, and that the divisions of architecture are derived from those of the human frame." In another place we read: "If a man is incapable of rendering the human frame aright, especially its anatomy, he will be incapable of building."

One lovable characteristic of Michael Angelo was that he did not choose that any man should see him at work for he used to say: "What one takes the greatest pains to do should look as if it had been thrown off quickly, almost without effort." His precept being "take infinite pains and make something that looks effortless."

I expect almost all of you have seen his "Last Judgment of the Damned" in the Sistine Chapel which took six years to complete and for which he was paid a miserable sum. But having read his life and loving his tempestuous temper, the painting I like best is that which illustrates the incomparable satire of a sweated artist trying to get his own back on Papal meanness, for in his picture of "St. Rochus"—that Saint who used to flay himself—Michael Angelo has painted into the centre of the flagellated skin a caricature of himself!

Leaving the artists of the middle ages, all of whom, even to the beloved Rafael, were influenced by the examples of Da Vinci and Michael Angelo, we come to Rembrandt (1606—1669), who, though he painted over 1,000 pictures, died in abject poverty.

Rembrandt, as you know, was a contemporary of Samuel Pepys at the time when the Dutch and English were contending for supremacy at sea. He was a queer, lovable autocratic genius, and like his great confrère, Leonardo Da Vinci, the artist in him was drawn to the dissecting-room because he understood that the faculty of minute observation was one of the greatest factors in becoming a great artist. Rembrandt has the ability of portraying the immortal soul of everything and expressed his meaning in the maxim that "nothing counts in this world except the inner spirit of things." For instance, look at the faces of the doctors in his masterpiece "The Anatomy;" those eyes look beyond the corpse stretched out before them, they see more than the tendons of an

arm, or the grey matter of the brain, they are gazing at the mystery that underlies all existence as if actuated by, Divine curiosity.

Velasquez, the courtier-artist of Spain, was an anatomist in a different sense of the word in that he delighted to paint the face of nature in a glass. He struck out a different line for himself, for whereas other artists painted for their patron, the Church, he broke all traditions by becoming a painter of Sinners of the Court rather than Saints of the Calendar.

Velasquez had no emotion and was indifferent about awaking any. To him a picture was never a painted poem. He delighted in the portrayal of jesters, dwarfs and idiots, perhaps deriving some sadistic pleasure from the ugliness of truth.

Pictures of his in the Louvre and Wallace collection are anatomically correct and wonderful as regards colour and grouping, but they possess the beauty of science rather than of art, for the artist's eye seems almost to wallow in the pathological tragedies depicted.

Leaving the company of great artists, we come next to Sir Christopher Wren, to whom London owes St. Paul's Cathedral and half its celebrated churches, as well as the famous Middle Temple Gateway. He is one of the best examples of my theme. Wren was an M. D. of Oxford and studied and practised medicine for many years in the City of London. He was one of the ablest scientists of his time and particularly endeared to Oxonians for his wonderful plates illustrating the anatomy of the brain.

I think all of you know what intravenous injections of such substances as iodine and salt solution are, but I expect it will be a surprise to many of you that the discoverer of the anatomical experiment of intravenous injection was Sir Christopher Wren, for while studying medicine at Oxford, he injected wine and beer into dogs' veins and made them drunk, and then experimented with opium and other drugs on human beings to watch their effects.

Perhaps, then, some of you, when next passing St. Paul's on the top of a bus or in an aeroplane, will remember that its great architect was primarily a doctor and only secondarily, a perfect draughtsman and builder.

Moreover, it should thrill you with pride to remember that Wren, at the height of his celebrity as an architect, stayed in London along with Samuel Pepys (when most of their colleagues had fled) while the great plague raged, and killed half the population, the one reverting to his original profession, the other thinking only of the interest of his beloved Navy and the threatened Dutch invasion.

Christopher Wren was a great gentleman who valued dignity and the *spiritus intus alit*. In him, surely the debt of the fine arts to medicine is well exemplified. So let us remember the epitaph on his tomb in St. Paul's *Si Monumentum Requiris, circumspice*.

Coming to more recent times perhaps the best examples are Charecot and Pasteur in France, and Sir Charles Bell, Haden, Sir James Paget and Sir Henry Thompson in England.

Pasteur, to whom we owe the great discoveries of Lister, was first intended for an artist. His pastels of his mother and the Maire of Arbois are really remarkable, showing that acute sense of observation which was to make him so famous in the field of science later.

Charecot, the famous neurologist of the Salpêtrière in Paris, was an artistic genius and under his influence the spirit of art came into being for the first time in any hospital, for he was not only an artist with great imagination, but a distinguished sculptor and worker in enamel—a most lovable character to whom science owes a great debt.

How well I remember him telling us in his deep bass voice that the whole realm of philosophy was to be found but in one book and in one author and that was Shakespeare, and that he, a Frenchman, never travelled without an English version of the Bard. For this reason he is particularly endeared to me.

You all know who Sir Edward Jenner was, but some of you may not realize that this chubby little general practitioner, the friend of John Hunter and Sir Joshua Reynolds, was a keen student of art, and that it was his artist's brain, full of imagination and trained in observation, that first detected the beauty of the unscarred faces of the Gloucester Dairy Maids as compared with the pock-marked features of society ladies.

• It was this complex of his that led him to the discovery of vaccination by calf-lymph—a discovery we owe entirely to the artistic eye of this little Pickwick-like doctor, for we read in Baron's "Life of Jenner" how those who had accompanied him 20 or 30 miles of a morning listened to him as "with a painter's eye and poet's tongue he delineated the beauty in nature around him."

Sir Charles Bell, the artist surgeon of the Battle of Waterloo, will be always distinguished for his momentous discovery in 1816, namely, that the posterior roots of the spinal nerves carry the sensory fibres, whereas the anterior roots carry the motor. Sir Charles Bell, from an artist's point of view, is entitled to fame for his studies of anatomical expression.

Sir James Paget, the great surgeon of St. Bartholomew's Hospital at the end of the last century will hardly be known to some of you. He was brought up in the society of artists and developed a very high standard as an amateur.

He used to impress upon us and all post-graduates that the study of art enabled one to see more things than others could see and, moreover, strengthened the power of remembering things.

Graves of Dublin, Addison of Guy's, Trousseau of France, Haden the brother-in-law of Whistler, Sir Henry Thompson, the pioneer of bladder surgery, were all distinguished artists and famous in their professions and will serve as worthy examples of my contention that the art of painting and engraving owes a great debt to medicine.

The debt of literature to medicine is almost as great. Some of the finest passages in our Bible and Shakespeare are associated with an intimate knowledge of the mysteries of life and disease. Passages so true and so accurate in detail as almost to persuade one that the authors were up-to-date scientists. In two previous lectures I have given you these, so I shall not hark back to the Bible or Shakespeare, but rather bring to your notice some other illustrations of my theme. For instance, Oliver Goldsmith, the pamphleteer, and author of the "Vicar of Wakefield" and that aphorism "handsome is as handsome does," was an itinerant Irish apothecary with habits none too sober

Again, how many of you know that the "Ode to a Nightingale" and "Endymion" were written by John Keats shortly after he qualified from Guy's Hospital. Those of you who know Hampstead and Keats's house may find it difficult to imagine the lover of Fanny Brawne, an indentured surgeon at Edmondston. It is for you to discover how far the study of medicine coloured the imagery of his poesy.

Oliver Wendell Holmes, the American satirist and author of the "Professor and Autocrat at the Breakfast Table," was a most lovable creature and perhaps best known in those days as a *poete de l'occasion*. This humorist was a general practitioner and Professor of Anatomy at Harvard University for 30 years. As an author he was widely read, but he has earned enduring fame in the archives of Medicine, for his one great piece of logical research work, written in 1843 on the contagiousness of puerperal fever.

This work, just as that of Lord Lister's, was greeted with a howl of abuse by the leading physicians of the time, but both, with earnestness and humility, adhered to their principles, and for all times have benefited humanity.

Oliver Wendell Holmes was the centre of a little group of intellectuals in Boston comprised of such men as Emerson, Hawthorne, Longfellow, Whittier, Motley and Lowell, who met together each week and dined together on the last Saturday of every month, originating an institution very famous in Boston, namely, the Saturday Club. This is interesting to us in Calcutta for, as you know, our Saturday Club originated as a Literary Association, though heaven knows it has departed long since from such an ideal. It is more than probable that our forebears in Calcutta in 1878 borrowed the idea and name of the Club from the original one founded by Oliver Wendell Holmes in 1866. The Doctor was fond of good dinners and when giving a toast was wont to say that though a woman tempted man to eat he had never heard that Eve had anything to do with his drinking—man taking to that of his own accord, needing no temptation.

There are a great many instances of distinguished authors being doctors, men drawing upon their knowledge of the frailties of human nature to illustrate their books.

One of the best examples is Tobias Smollet (1721—1771) who, like so many other Scotsmen, made his way to England, never to return to his native heath. But we forgive him, for the charm of his "Roderick Random" and the brilliancy of "Humphrey Clinker."

It is good to think that it was this irascible little Scotch doctor who discovered "Nice" and the "Riviera," for us and the French. It is his great powers of observation and description that make him an infallible witness of his century.

Quite another type of author is Sir Thomas Browne (1605—1682). Here, indeed, is the beloved physician who, despite a civil war raging round him, sat placidly writing the "Religio Medici" and a score of discourses all displaying the great erudition of a Platonic Mystic. If you want confirmation of his genius and charm of style, take up and read the concluding chapters of "Urn Burial."

Tchekow, the Russian, was another doctor who had an enormous influence on his generation, his masterpieces being "The Duel," "Ward No. 6" and "The Bishop." He used his knowledge of medicine to bring out his sense of form as an artist.

Coming to modern times, it is hardly necessary to recall to you Conan Doyle of Sherlock Homes fame; Somerset Maugham, that master of drama and short story; Brette Young, the author of "Brother Jonathan," and more recently still, Cronin, the author of "Hatters Castle."

These are names known to you all, but I wonder how many of you realize that Clemenceau, President of the French Republic, during the grimmest years of the War, and part-author of that Versailles Treaty which has cast the world into its present gloom and depression, was a practising physician throughout his long life.

Again, we must not forget that our late Poet Laureate, Robert Bridges, was a cultured physician, many of his poems showing the soul and instinct of an artist alive to human suffering.

Sir Charles Wyndham, one of the most beloved men of our stage and the Garrick Club, was a surgeon in the American Civil War, and often gave to his audience the benefits of his medical culture.

So far, I have been unable to find any example of a great musician who studied medicine except one, a doctor Auenbrugger, who though a physician was friend of all the fine arts, composing in his spare time an opera called the "Chimney Sweep," which was played in Vienna.

Auenbrugger's name, as an artist-musician, has no significance to the lay mind, but the world of medicine owes him an enormous debt, for in 1752 he made the simple observation that "the chest of a healthy man resounds when struck, giving us a new sign for elucidation of disease of the chest," thus originating the science of percussion.

This momentous discovery for the diagnosis, prognosis and treatment of chest diseases we owe to Auenbrugger's love and knowledge of music.

Finally, it may interest some of you to remember that Handel, the great musician, was the son of a humble surgeon and so recall those famous lines "Praise ye all famous men and their fathers that begat them."

The time has now arrived that perhaps I should apologise for this article being a thing of "Shreds and Patches," but you will forgive me, if I venture to think that there is no profession in which the average of culture has been higher than the one to which I have the privilege to belong—medicine having given to art some of its most brilliant lights.

Genius : Its Medical Aspect.

A Highland cynic once remarked that genius is ten per cent inspiration and ninety per cent perspiration. He was thinking perhaps of the Scots' genius for work ; but what I want to impress upon you to-day is that a genius is a superman whose creative spirit resides not so much in his primary self as in his secondary personality.

For instance, take the case of Wagner and Shelley ; we read that in the throes of their creative activity they were absolutely oblivious to all around them ; their primary selves being completely eclipsed for the moment, they became possessed by a dæmon, the secondary self. Or take the story of Mozart who has told us that much of his music came to him without his volition as if he had composed it in a trance.

Therefore in order to understand genius we must grasp the fact that there is nothing in the primary self of a genius accountable for his creative power except his superior mind which may, at any moment, shift its gears so that the latent power residing in the secondary personality can be set free for inspired performance.

To-day I hope to show you, from a medical point of view, upon what this gear-shifting mechanism depends, for there can be no question that in a very large number of cases alcohol, tubercle and venery have supplied the spark or poison which has paralysed or inhibited and at the same time set free those creative powers in the secondary personality that denote genius.

It is a curious fact that there has never been a time since Osiris, Bacchus and Saturn disputed the honour of the invention of alcohol, that it has not played a part in the intellectual activities and cultural progress of the world.

From Demosthenes to Birkenhead, orators have found their inspiration in alcohol. Horace called it "the arbiter of peace and war ;" Gladstone found it especially necessary at the time of greatest intellectual exertion ; Pitt and Fox prepared their speeches under its influence ; Æschylus, the creator of the Agamemnon, wrote his tragedies when

inebriated. Nor should we forget that the veritable epidemic of alcoholism during the Elizabethan era was coincident with the greatest intellectual awakening of that age; for the real glories of the Tavern School of Writers began with the Mermaid Group—Shakespeare, Beaumont, Ben Johnson and Fletcher.

Some of you may perhaps recall those lines of Keats about the “charmed circle”—

“Souls of poets dead and gone,
What Elysium have ye known
Happy field or mossy cavern,
Choicer than the Mermaid Tavern.”

John Gay, the writer of “The Beggar’s Opera,” Addison, Pope, Swift, Hogarth, Walpole and Dr. Johnson, all famous taverners, have admitted their debt to alcohol.

Indeed, it is said of many of them that they appeared flat and heavy after the first bottle and only after the second did they become brisk and lively, full of wit and learning, and most agreeable companions, which curiously enough is borne out by those lines in Henry VIII: “Good company, good wine, good welcome can make good people.”

Mr. Birrell tells us that Charles Lamb used to get drunk far too frequently on gin and water and Leigh Hunt tells us that Byron often worked all night, in the ardour of composition, drinking grog the whole time.

De Quincy and Samuel Taylor Coleridge drank quarts of ethylized laudanum per week and Gabriel Rossetti took whisky with his chloral and, of course, everyone knows the story of that glorious pagan Omar Khayyam whose muse, inspired by wine, wrote the Rubaiyat and those lines:—

“I often wonder what the vintners buy
One half so precious as the goods they sell.”

Finally, it is hardly necessary to remind Calcutta that Robert Burns wrote the lines:—

“O Whisky! Soul o’ plays and pranks!
Accept a Bardie’s gratfu’ thanks!
When wanting thee, what tuneless cranks
Are my poor verses!”

Or those lines of Tom Moore :—

“ If with water you fill up your glasses
You'll never write anything wise
For wine's the true horse of Parnassus
That carries a bard to the skies,”

which would seem to indicate that they, like other *Gepiuses*, recognised that alcohol was the dominant inhibiting factor. This being so, it is sad to think that the Volstead Act will prevent an Emerson, an Edgar Allen Poe or Walt Whitman from ever reappearing in America—prohibition and dull mediocrity being handmaidens.

So far I have tried to demonstrate that in many cases the psychopathology of genius is connected with alcohol. But that is by no means all, for history shows that the creative spirit of great minds is capable of becoming profoundly affected by other poisons, particularly the toxin of tuberculosis.

All of you know the term “*spes phthisica*”—that curious condition of mental exaltation which promotes futile optimism, yet strangely enough that stage of the disease has produced some of the world's greatest literature.

Samuel Johnson held the view that “the chief glory of every people arises from its Authors.” Is it not, then, melancholy to think that the hectic afflatus of creative genius has been given to us at such a cost? Examples are legion.

The names of Schiller, Keats, Robert Louis Stevenson, the Brontës, Voltaire and Balzac will jump to your memory, but how many of you know that Molière acting superbly died of hæmoptysis on his own stage, and that in the domain of art tuberculosis claimed Raphael, Watteau, and Bastein Le Page. Among musical geniuses it seized Purcell, Mozart, Paganini and Chopin. In the ranks of sea-fighters it numbers John Paul Jones and Nelson. Among dramatic artists is Rachel. Of physicians it carried off William Withering, the discoverer of digitalis; Sir Thomas Browne; Laennec and Paul Ehrlich of Salvarsan fame. Among theologians, statesmen and scientists it affected John Calvin, Cicero, St. Francis of Assisi, Priestly and Cardinal Richelieu. From philosophers it claimed Spinoza, Descartes, Cecil Rhodes and D. H. Lawrence.

In the realms of medicine there is no other disease which so exalts the psychical and physical status of the individual as tuberculosis. Indeed, it would seem this malady, although it tends to unfit its victims for material success, nevertheless helps to quicken and inspire the intellect—a Divine compensation perhaps for minds of extraordinary intellectual endowment.

There may be many here who would be inclined to dispute these facts, and argue that if they had not had tuberculosis their genius would have reached still greater heights, but biography will not bear this out.

For instance, Goethe throughout his life was subject to hæmoptysis. John Milton and Samuel Butler were chronic phthisics. Alexander Pope was the victim of tubercular disease of the spine. Samuel Johnson suffered from lupus vulgaris, Lawrence Sterne, the author of *Tristram Shandy*, died of consumption, as did Jane Austen, Elizabeth Barrett Browning, Shelley, Keats and Hood.

John Ruskin and John Locke throughout their lives suffered from pulmonary phthisis, and the artistic genius of Beardsley was most prolific during the last six bed-ridden years of his life.

Examples of this curious mental fertility of tubercular genius are innumerable, but the one that appeals to me the most, because it comes within our own times, is that of Francis Thompson. He was a student of medicine for six years and failed three times in his examinations. His father cast him off utterly in disgust. He came to London destitute, sold matches, newspapers and pencils in the streets, ran errands and held horses, sleeping at nights on the waste ground near Covent Garden. Five years of terrible privation and sickness reduced him to beggary. During these years of outcaste life he wrote and sent to Mr. Wilfred Meynell two poems on ragged scraps of paper, "The Passion of Mary" and "Dream Tryst." Mr. Meynell recognised his genius and induced him to enter hospital because he was in the early stages of tuberculosis. Here he wrote "The Ode to the Setting Sun" and "The Home of Heaven." He died in 1907, the Laureate of the Catholic Church. His tomb in Kensal Green is inscribed with his own delicious words:—

"Look for me in the nurseries of Heaven."

This phrase furnishes the key to a proper understanding of every great artist, for they never outgrow their childhood, their intuition is the intuition of the child, piercing that which is hidden to the vision of the grown up.

Just such another was John Synge, the supreme genius of the Irish Renaissance in dramatic art. He died, after years of suffering, from tubercular peritonitis, in 1909. Years indeed made bright for us by the production of "The Play Boy of the Western World" and "The Riders to the Sea"—as the flame of his genius spluttered and spent itself.

Tuberculosis and alcohol provide over a hundred links with names of supreme genius, but neither of these diseases furnish a clue to what we may call the psycho-chemistry of genius. There is but one thing certain, that genius is not allied to madness, although that is the vulgar view.

Otto Weininger, whose book "Sex and Character" you are all familiar with, formulates the law that the genius which runs to madness is no longer genius, for genius is not a disease nor identical with degeneracy. On the contrary, it is the highest and most godlike of human faculties; but still there would seem to be one fundamental fact, namely, that degenerate stock manifests an affinity for genius, from which it would appear that genius is a freak of nature, by which she makes use of doubtful or peculiar soil for glory.

This conclusion is a confounding one to eugenists and a comforting one to pragmatists; for if a genius is the product of bad or peculiar stock, surely then humanity pays dearly for them, in that millions of defectives and degenerates must be fertilized in order to produce one superman. Is it to be wondered at then that genius has been compared with the lily on a dunghill?

Eugenists advise no mixing of breeds or people, and postulate that C 1's must marry C 1's. If that is to be so, Utopia will be dull though perhaps physically sublime, for let us not forget the mother of Mohammed was a Christian Jewess, the elder Dumas was half a Negro, that Moses married an African Negress. (You will remember the quarrel between Moses and his snobbish sister, Miriam, but we are told that "the Lord God of Hosts approved the union.") Anyhow it is certain that two-thirds of the

great men of the World owe their genius to ethnic complexities, that is, the intermingling of many types of blood and disease.

It is for this reason that there are perils to the world from birth control, for without numbers there can be no selection and no racial advance. Decreasing fertility and increasing eugenism must tend to the annihilation of genius and the non-production of pioneers and leaders of men—a pitiable state of dull mediocrity, for “without vision the people perish.”

There are a few more points about genius which are not without interest and which many of you will have noticed if you are fond of biography. The first is the larger element of immaturity, of childlike behaviourism in the great genius which would appear to be the reason why the superman so often breaks down under the stress and strain of the world.

For instance, observe the naive outlook upon life of Shelley, Walt Whitman, Samuel Taylor Coleridge, Henry James, Edward MacDowell, Lawrence and Dreiser; or the peevishness of Cæsar, Michael Angelo, Napoleon and Carlyle. Then again all of you must have been struck by the unattractive physical development of the genius. Indeed nine-tenths of them would be in a C 3 group to-day and yet they have produced Shakespeare, Napoleon, Gandhi and Jesus, for Celsus and St. Ephrem of Syria both narrate that the Son of God was small and ill-favoured and “appeared to man with a stature of three human cubits” (5 feet 3 inches). But one feature common to them all is the fire and luminosity of their eyes, which bind all men and compel followers.

Perhaps this is one of Nature's paradoxes for the formulation of ideas on the part of a genius must be done without any real tax upon his physical resources—a universal manifestation of genius being an intense fear or aversion to physical labour, which brings us to one more curious point and that is the sterility or lack of virility that distinguishes them.

Examples of this are legion, but the names of Napoleon, Ruskin, Newton, Carlyle, Dr. Johnson, Richard Burton and Samuel Taylor Coleridge will at once rectify to you.

Another noticeable feature of genius is that he finds it difficult to adapt himself to his environment. Oftentimes

like a vagabond he prefers to be left alone, obscurity being a symptom of a power complex which is both protective and creative.

This peculiarity is particularly well seen in the lives of Goldsmith, Burns, Byron, Heine, Burton, Tasso, Musset, Wagner and Synge.

One of the greatest difficulties that the eugenist has to face is the undisputed fact that the parents, on both sides, of unimpeachable geniuses have been of very doubtful habits, and not only this that these supermen themselves have bred—feeble offspring or none at all. How are we to explain this except on the supposition that brain cells are the plaything of the gods.

A hundred instances of this paradox can be narrated. For example, Julius Cæsar, St. Paul, Shakespeare, Mohammed, Handel, Napoleon, Flaubert, Swift, Newton, Mozart, Dostoviesky and Paganini were epileptoids.

Botticelli, Shelley, Leonardo Da Vinci, Raphael, Michael Angelo, Callini, Rubens, Tintoretto, Vandyke, Watteau, Bunyan, Martin Luther, Maupassant, Nietzsche, Oscar Wilde were far from normal and none of them left any heir of any fame.

To-day it would be hardly fair to end without reference to the work of Professor Berman, who is of the opinion that if the life history, character and physical condition of any genius be dissected his superiority over his fellow men can be explained by a lack of balance in, or an antagonism between, certain all-important internal secretions from the thyroid, pituitary, adrenal and gonad glands.

In the normal person there is a stable balance between them, whereas in the genius one or another of these glands is either deficient or in excess, with the result that physique, conduct, character and mentality are altered. For instance, Napoleon and St. Paul can easily be interpreted as having possessed well functioning anterior pituitary, thyroid and adrenal glands, but deficient posterior pituitary hormones. On the other hand Julius Cæsar, Orator, Politician, Lover, Historian, conqueror and statesman, is a perfect example of hyperadrenalism and posterior pituitarism.

Florence Nightingale, beautiful and sweet tempered as a young woman, became as you know before the age of 35

quadrangular and acid tempered as her anterior pituitary gained ascendancy. Later in life this part of the gland failed altogether with her thyroid, and she became fat moody and indolent—myxœdemic.

Such examples and instances, as I have given are perhaps enough. History and biography will furnish many more, but still we must admit that we do not understand the Biology and Genesis of genius; all that we can say at present is that analysis would appear to demonstrate that bad stock, disease and alcohol are essential foundations for genius and are a part of the evolutionary scheme of things.

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Gynæcology and Obstetrics in Shakespeare. ;

An Address to the Asiatic Society of Bengal.

Three years ago I had the honour of speaking to this Society of the medical lore found in the Bible. To-night I am hoping to interest you in some aspects of Gynæcology portrayed by Shakespeare.

I expect that most of you are aware that books have been written suggesting that the Bard of Avon was a lawyer, soldier, courtier, gardner or astronomer, and yet, such was his genius that I hope almost to persuade you that he was a doctor.

In the 36 plays mention is found of practically all the diseases and drugs known in his time, and in "Troilus and Cressida" (Act V, Scene I) you will find a long list of such ills as the flesh was then heir to. But quite apart from such record, it is astounding to discover the wonderful knowledge of physiology, pathology, and psychology to which the plays bear witness. Let us acclaim him in his own words: "How noble in reason, how infinite in faculty, in apprehension how like a god."

William Shakespeare was born on April 23rd, 1564, and died on his anniversary in 1616, that is 12 years before Harvey published to the world his momentous discovery of the circulation of the blood. But it should be remembered that for 30 years the poet was mixing constantly with the keenest brains of the realm, both in and out of London, on his theatrical tours, and that this was the glorious Elizabethan age when merchant-venturers, fired by the voyage of Hakluyt and "the new map with the augmentation of the Indies" ("Twelfth Night"), were seeking trade facilities with the distant West and East.

Surely then it needs but little imagination to picture the returning wanderers in the convivial company of Shakespeare and his player friends at the Mermaid exchanging their tales of courts, courtesans and countries.

Those were the days of the Renaissance of Medicine as of Art, when such famous men as Fallopius, Vesalius, Fabricius, Columbus and Montanus had begun scientific dissection of the cadaver, and it is by no means improbable that Shakespeare heard of these men, or saw engravings of

their discoveries in some London printing house with which he was in close touch throughout his life. Nor, in assessing his knowledge of medicine, must it be forgotten that his eldest daughter Susannah married Dr. John Hall in 1607, and that therefore some of his wealth of clinical observation may be attributed to this close association with one of the profession, although the greater number of his plays were written before that date.

In the 36 plays seven regular physicians are mentioned, but, he it noted, no surgeon, except it be that Dick Surgeon in "Twelfth Night," who was so intoxicated that he could not attend his duties. You will remember the lines :

"Didst see Dick Surgeon, sot?"

"Oh he's drunk, Sir Toby, an hour ago his eyes were set at eight in the morning. He's a rogue."

At that time, besides physicians licensed to practise by the College of Physicians or Company of Barber Surgeons, there were a host of quacks, both male and female, allowed by Act of Parliament in 1543 the liberty to practise, "if they had knowledge and experience of the nature of roots, herbs and waters, and of the operation of the same." As instances of these, you will remember Dr. Pinch in "The Comedy of Errors," Friar Laurence in "Romeo and Juliet," the female water-caster in "Twelfth Night," and Helena in "All's Well that Ends Well." It is possible also that Shakespeare put Dr. Caius in "The Merry Wives of Windsor" in this category, for when the learned doctor boasts of his surgical skill and threatens to remove the testicles of Sir Hugh Evans for interfering with his love affairs, he is dubbed "Belly Stale," "a Castalian King Urinal" and "Monsieur Mockwater," though I must say I have a liking for that one small meed of praise he earns from the innkeeper :

"Shall I lose my doctor? No, he gives me the potions and the motions."?

Early Marriage.

In Elizabethan times, as in India to-day, early marriage was the rule rather than the exception, but it is obvious that the dangers thereof were recognized, for in "Romeo and Juliet" (Act I, Scene III), speaking of Juliet, Lady Capulet says to Paris :

"My child is yet a stranger in the world,
She hath not seen the change of fourteen years,
Let two more summers wither in their pride,
Ere we may think her ripe to be a bride."

To which Paris replies :

"Younger than she are happy mothers made "

and Lady Capulet retorts :

"And too soon married are those so early made."

And in the next scene Lady Capulet says to Juliet :

"We'll think of marriage now.

Younger than you are made already mothers.

By my count, I was your mother much upon these
years

That you are now a maid."

Quickening.

There are two references to this : one in "Love's Labour Lost (Act V, Scene II) :

"Faith, unless you play the honest Trojan, the
poor wench is cast away, she's quick, the child
brags in her belly already, she's yours"

and the other in "The Comedy of Errors" (Act I, Scene I):

". till my factor's death

Drew me from kind embracements of my spouse

From whom my absence was not six months old

Before herself almost at fainting under

The pleasing punishment that women bear,

. became

A joyful mother of two goodly sons.

And which was strange, the one so like the other

As could not be distinguished but by names."

Obviously, a case of uniovular twins.

Longings of Pregnancy.

The only mention of this condition that I can find is rather a quaint one in Act II, Scene I of "Measure for Measure":

"Sir, she came in great with child, and longing,

save your honour's reverence, for stewed prunes.
 Sir, we had but two in the house, in a fruit dish,
 a dish of some three pence, your honours have seen
 such dishes, they are not China dishes, but very
 good dishes."

These lines would appear to indicate that regular traffic with the East was quite usual in 1608 when this play was written.

Parity of Ages in Husband and Wife.

In 1582 Shakespeare married Anne Hathaway who was eight years his senior. The marriage, judging by the Bard's absences and his will, cannot be considered a happy one: you will remember that all he left her was his second best bed!

I think he nicely points the physiological moral of their disparity in ages in those lines in "Twelfth Night" (Act II, Scene IV), which were written in 1600

"Too old by heaven. Let still the woman take
 An elder than herself, so wears she to him,
 So sways she level in her husband's heart.
 For boy, however we do praise ourselves,
 Our fancies are more giddy and infirm
 Than woman's are."

"Death of the Fœtus.

Death of the fœtus or its macerated retention *in utero*—probably due to syphilis—is put forward by Henry VIII. in Act II, Scene IV, as an excuse for his divorce from Katherine of Aragon:

"Who has commanded Nature that my lady's womb,
 If it conceived a male child by me, should
 Do no more offices of life to it than
 The grave does to the dead: for her male issue
 E'er died ere they were made, or shortly after
 This world had aired them."

And in "Henry VI," Part III, Act IV, Scene IV, Queen Elizabeth bemoans the disastrous effect of acute emotion upon the child within her, in the lines:

"Fair hope must hinder Life's decay,
 And I the rather wean me from despair
 For love of Edward's off'ring in my womb,
 This is it that makes me bridle passion,
 And bear with mildness my misfortune's cross,
 Best with sighs or tears I blast or drown
 King Edward's fruit, true heir to England's crown."

Of course I need not remind you that the idea of the infant being born as the poet says :

"Full of unpleasant blots and sightless stains,
 Lame, foolish, crooked, swart, prodigious,
 Patched with foul moles and eye offending marks."

as a result of pre-natal influence still holds to-day, though we are unaware of any scientific explanation.

Premature Birth.

That premature birth may occur from the rolling of a ship will be of interest to many mothers proceeding home from India, for it is described in "Pericles" (Act III. Scene I):

" Lucian, O
 Divinest patroness and midwife gentle
 To those that cry by night, deliver thy deity
 Aboard our dancing boat, make swift the pangs
 Of my queen's travails."

And in "A Winter's Tale" (Act II, Scene II) fear and grief at being cast into prison causes Queen Hermione to have a precipitate and premature labour :

"How fares our gracious lady?"
 "As well as one so great and so forlorn
 May hold together, on her frights and grief,
 Which never tender lady hath borne greater,
 She is something before her time delivered."

Toxaemia of Pregnancy.

Although the line I am going to quote was not written with reference to conception, it so beautifully gilds the picture of a woman pregnant with anxiety and sickness, that I feel compelled to make use of it, for who in India

has not seen the sallow icteric face of the unwilling mother? The line is from "Troilus and Cressida" (Act I, Scene III)

"What grief has set the jaundice on your cheeks?"

Labour.

The references to difficult labour are interesting to us, for, as I pointed out in my former address, there are very few instances in the Bible of dystocia, and but of two deaths following confinement, the one from exhaustion and the other probably from inversion of the uterus or post-partum hæmorrhage. But as I then remarked, this absence of any record of difficult labour is what one would expect of primitive people living active, healthy, nomadic lives. Conditions were probably much the same in country districts and among the well-to-do of Merrie England, so perhaps we should not expect "sweet Master Shakespeare" to mention difficult labour. If death in child-bed were common, it is hardly likely, considering the enormous wealth of medical lore he gives us, that he would have omitted to make use of the fact in one or other of the plays.

On the other hand, this is perhaps surprising when we remember that rickets, one of the commonest causes of dystocia, existed in the crowded areas of the larger towns in the poet's time, for within 60 years of his death the authenticated description of rickets, *alias* the "English disease," was written by Dr. Glisson.

In "Henry VIII" (Act V, Scene I) the agony of Anne Boleyn at the birth of the future Queen Elizabeth of England is described:

" the Queen's in labour,
They say in great extremity, and feared
She'll with the labour end."

And in contrast it is rather amusing in the last lines of the same scene to observe the disgust of His Majesty when he was told by the garrulous old lady that he had a daughter:

"As like you as cherry is to cherry."

It is of interest to note that in "Henry VI" (Part III, Act V, Scene VI) the birth of Gloucester is described as ill-omened and difficult in the lines:

"Thy mother felt more than a mother's pain,
And yet brought forth less than a mother's hope,
To wit, an indigested and unformed lump."

And later in the same scene we are told in his own words that he was a footling presentation and born with teeth:

"For I have often heard my mother say
I came into the world with my legs forward.
The midwife wondered, and the women cried
'O Jesus bless us he is born with teeth.'
And so I was. Which plainly signified
That I should snarl and bite and play the dog."

Again, it would appear from Act IV, Scene IV, of "Richard III" that not only does the poet describe the birth of Gloucester as difficult, but it looks as if it was a case of oligoamnios and that this was the cause of the deformities, for we read in "Henry VI" (Part III, Act III, Scene II) the words:

"She did corrupt frail nature with some bribe,
To shrink mine arm up like a wither'd shrub.
Where sits deformity to mock my body,
To shape my legs of an unequal size,
To disproportion in every part."

Moreover, it would seem that it was recognized that the foetus could be deformed or strangled by morbid conditions *in utero*, for we have the lines in "Richard III" (Act IV, Scene IV):

"Oh, that she might have intercepted thee
By strangling thee in her accursed womb"

which would suggest strangulation by the umbilical cord.

Caesarean Section.

There seems little doubt that this operation was well known and talked about in the days of Shakespeare, for not only are there two actual references in the plays, but an expression is used metaphorically in "King John" (Act V, Scene III) which would indicate that his audience was well acquainted with the operation. The lines are:

"You bloody Nero's, ripping up the womb
Of your dear mother England, blush for shame."

And although Shakespeare may have had "little Latin and less Greek," it is quite probable that he had heard of those lines in "Ovid" (Metam. Lib. 2, 1, 630) :

Natum flammis uteroque parentis

Eripuit geminique telit Chironis in antrum.

which indicate that Æsculapius was cut from his mother's womb. Perhaps you will let me remind you of the story that Coronis, the mother of the unborn Æsculapius by Apollo, was killed by Artemis for unfaithfulness. Her body was about to be burned on the pyre, when Apollo snatched the boy from his mother's womb (and the flames) and carried him to the cave of the wise Centaur Chiron, who instructed him in the cure of all diseases, and so he became the great god of medicine to the Greeks.

The operation is of great antiquity, and I think it is to the credit of the Church of Rome that it popularized and countenanced it in mediæval days, doubtless in the teeth of violent hostility. Dr. Herbert Spencer tells us that we owe the title "Cæsarean Section" to a Jesuit priest, Theophile Raynaud, who published memoirs in 1637 entitled "*de ortu infantium contra naturam per sectionem Cæsaream tractatio.*" Anyhow, it can be safely assumed that the popular idea which labels Julius Cæsar as being the first living result of the operation is erroneous, for historically we know his mother lived long after his birth, and had rumour or tradition of such an operation surrounded him, surely Plutarch would have mentioned it and Shakespeare touched upon it in his play? As a matter of interest, it is possible that the word 'cæsarean' is a play upon the Latin verb *cædo*.

Dr. Herbert Spencer tells us that the first authentic record of Cæsarean section, with the recovery of mother and child, is by Bauhinus. The operation was performed by a sow gelder, Jacob Nufer of Siegershausen, who, after thirteen midwives and several lithotomists had failed to deliver or relieve his wife, decided to operate with a razor "*Non secus quam porco.*" The child lived to the age of 77, the mother recovered and later was delivered of twins, and four other children were born naturally after them. So you see, even in those days, "once a Cæsarean" did not mean "always a Cæsarean."

The question now arises whether in his plays Shakespeare refers to the classical operation, for you remember, that in "Macbeth" (Act V. Scene VII) the Thane of Glamis boasts :

"I bear a charmed life which must not yield
To one of woman born"

To which Macduff replies :

"Despair thy charm,
And let the angel whom thou still hast served
Tell thee, Macduff was from his mother's womb
Untimely ripp'd."

To my mind the interpretation of these lines is that the mother of Macduff perished prematurely or in labour and, in obedience to the edicts of Holy Mother Church, the baby was cut from her womb.

Again, in "Cymbeline" (Act V. Scene IV) we have the lines :

"Lavinia lent me not her aid,
But took me in her throes.
That from me was Posthumus ripp'd
Came crying 'mongst his foes,
A thing of pity."

This, together with the lines in Act I. Scene I :

" for which their father
Then old and fond of issue, took such sorrow
That he quit being, and his gentle lady
Big of this gentleman, our theme, deceased
As he was born. The King he takes the babe
To his protection, calls him Posthumus Leonatus "

would seem to leave no shadow of doubt that the poet infers post mortem Caesarean section, from the play upon the name of Posthumus, and the word ripp'd, c.f. "Eripuit" in the lines of Ovid.

The First Cry of the Infant.

I feel that many a mother in the anxious moments immediately following child-birth, when the baby's life is in doubt, will appreciate the lines in "King Lear" (Act IV, Scene VI) :

“Thou know'st, the first time that we smell the air
 We wawl and cry
 When we are born we cry that we are come
 To this great stage of fools.”

Lactation.

It is interesting to read that Juliet was not weaned until she was three years old, and the poet states that the nurse had to put wormwood on her nipples in order to wean the child :

“When it did taste the wormwood on the nipple
 Of my dug, and felt it bitter, pretty fool,
 To see it tetchy and fall out with the dug.”

Despite the prolonged lactation, Juliet does not appear to have been rickety, for in the same scene we read :

“For then she could stand alone ; nay by the rood
 She could have run and waddled all about.”

Sterility.

In mediæval times there existed, as there does in India to-day, a belief in the efficacy of charms and erotic flagellation for the cure of this condition. In Act I, Scene II of “Julius Cæsar,” Shakespeare makes use of Plutarch's description of the feast Lupercalia, in order to remedy Calpurnia's sterility. Let me quote you the passage from Plutarch :

“In those days many young men and magistrates ran up and down the city with their upper garments off, striking all they met with thongs of hide by way of sport, and many women even of the highest rank placed themselves in the way, and held out their hands to the lash as boys in school do to the master, out of the belief that it procures an easy labour for those who are with child and makes those conceive who are barren.”

I'm sure you will like that reference to the boy and his schoolmaster, written in A. D. 100, and will wish that there were more of this now-a-days in our schools !

The lines of Shakespeare are :

“ Forget not in your speed Antonius
To touch Calpurnia, for our elders say
The barren, touched in this holy chase,
Shake off their sterile curse.”

Aphrodisiacs.

Throughout the ages much trust has been placed in the doubtful efficacy of such substances. For instance, in “ The Merry Wives of Windsor ” (Act V, Scene V) we have the invocation of Falstaff:

“ Let the sky rain potatoes ; let it thunder to the tune
of “ Green Sleeves,” hail kissing-comfits, snow
eringoes ; let there come a tempest of provocation,
I will shelter me here.”

The potato of that time was the sweet potato (*convolvulus Battatus*), which, like the eringo (sea holly), had the reputation of being able to restore decayed vigour. Of course, I need not remind you that our potato of to-day is the *solanum tuberosum*, and, with tobacco, was originally brought from Virginia by Sir Walter Raleigh.

It may interest some of you to know that the tune of “Green Sleeves” is an old ballad entered at Stationers’ Hall in 1580, the words and tune of which are still extant.

Again, in “ Othello ” (Act I, Scene I) Brabantio infers a secret knowledge of aids to concupiscence when he says :

“ Are there not charms
By which the property of youth and maidenhood
May be abus’d ? Have you not heard, Roderigo,
Of some such thing ?”

And later he accuses Othello of influencing Desdemona :

“ Thou hast practised on her with foul charms,
Abused her delicate youth with drugs, or minerals,
That weaken motion.”

Midwives.

Reference to midwives are numerous, and it is probable that Shakespeare was thinking of these women when he wrote in “ Twelfth Night ” (Act IV, Scene IV):

“ Carry his water to the wise women ”

but it would appear that the "wise women" were, like Dickens' Sarah Gamp, too prone to liquid refreshment, for in the same play (Act II, Scene V) Marcius says :

"Nay but say true, does it work upon him?"
And Sir Toby answers :

"Like *aqua vitae* on a midwife."

The midwife of those days apparently exhibited a trait perhaps not altogether obsolete to-day, loquacity, but alas, with us the punishment does not fit the crime. For instance, in "Titus Andronicus" (Act IV, Scene II) because she was "a long-tongued babbling gossip," the midwife was murdered in order to stay the evidence of illegitimacy in her patient.

But against this there are lines in "Romeo and Juliet" (Act I, Scene IV) referring to Queen Mab as the fairies' midwife :

"This is the hag, when maids lie on their back,
That presses them, and learns them first to bear.
Making them women of good carriage."

Medico-Legal.

Apart from the reference in "The Winter's Tale" (Act II, Scene II), where Paulina asseverates the law of all countries of all times, that a woman pregnant cannot suffer capital punishment, in the lines :

"This child was prisoner to the womb and is
By law and process of great nature, thence
Freed and enfranchised, not a party to
The anger of the king, nor guilty of,
If any be, the trespass of the queen."

There is the claim of Joan of Arc in "Henry VI" (Part I, Act V, Scene V) to the exemption from execution, on the plea of pregnancy :

"I am with child, ye bloody homicides,
Murder not, then, the fruit within my womb.
Although ye hale me to a violent death."

It is only fair to Shakespeare's memory to state that eminent modern scholars doubt whether he was the author of the above episode in this play. They aver that the original manuscript was tinkered with, and its author

accepted the idle rumours of her enemies against the Maid, just as we accepted the most amazing reports about the Germans in the Great War. For if you will read Andrew Lang's masterpiece "The Maid of France," you will see that there is irrefutable evidence produced of her austere chastity throughout life, and you will recall her last piteous appeal:

"Alas will they treat me so horribly and cruelly and burn my body, that never was corrupted, and consume it to ashes this day?"

Although not strictly relevant to gynæcology, it is a curious fact that the poet should allude in "Cymbeline" (Act I, Scene VI) to animal experimentation for the purpose of discovering the potency of drugs. Perhaps he had read or heard of the experiments of the perfidious Cæsar Borgia, for in the same play he describes the effects of chronic arsenic poisoning:

"A mortal mineral, which being took should by the minute feed on life, and lingering, by inches waste you."

Of acute arsenic poisoning, he gives a vivid description in "King John" (Act V, Scene VI).

There are several other references to poisonous drugs in use at that time; for instance, the line in "Hamlet" (Act IV, Scene VII):

"I have bought an unction of a mountbank" would seem to indicate curare, whereas the words in Act Scene V:

"With juice of cursed hebenon in a vial" must mean hemlock (conium) which, you will remember, Socrates died of. The lines in "Macbeth" (Act I, Scene III):

Have we eaten of the insane root
That takes the reason prisoner?"

refers of course to henbane (hyoscyamus)

"Which if it be eate or dronke, it breedeth madness or slow likeness of sleep."

Personally, speaking of drugs, the line that I like best is that appeal of Cleopatra to Charmian:

“ Give me to drink mandragora,
That I may sleep out this great gap of time
My Anthony is away.”

Though perhaps Iago's description in “ Othello ” (Act III, Scene III) is almost as fine :

“ Not poppy nor mandragora,
Nor all the drowsy syrups of the world,
Shall ever medicine thee to that sweet sleep
Which thou ow'dst yesterday.”

It may interest you to know that mandragora or mandrake was the antispasmodic that Reuben gave to Leah, and which was so helpful to Rachel in Genesis, chapter 30, verse 14 :

“ And Reuben went in the days of the wheat harvest and found mandrakes in the field, and brought them unto his mother Leah. Then Rachel said to Leah : ‘ Give me I pray thee of thy son's mandrakes.’ And Jacob slept that night with Leah and she conceived. And later also Rachel conceived.”

Prognosis.

It is said of Sir William Osler that he never saw a patient, however dangerously ill, without leaving behind him an atmosphere of hope. The same idea is to be found in “ Anthony and Cleopatra ” (Act II, Scene V) :

“ Though it be honest, it is never good
To bring bad news.”

And in “ Love's Labour Lost ” (Act V, Scene II) we read

“ Your task shall be
With all the fierce endeavour of your wit,
To enforce the pained impotent to smile.
The miserable have no other medicine,
But only hope.”

Again, we read in “ Henry IV ” (Part II, Act I, Scene I)

“ He that but fears the thing he would not know,
Hath by instinct, knowledge from other eyes
That what he feared is chanced.”

It is worthy of note that the poet well understood the importance of the previous history of adjudging disease, for in “ Henry IV ” (Part II, Act III, Scene I) we read :

" There is a history in all men's lives
 Figuring the nature of the times deceased,
 The which observed, a man may prophesy
 With a near aim, of the main chance of things
 As not yet come to life."

Gentlemen, the time allotted me is coming to an end,
 and you remember what Lord Say remarked in " Henry VI":

" Long sittings to determine poor men's causes!
 Hath made me full of sickness and diseases."

Nevertheless, I trust you will not think of me as

" A fellow of infinite jest and most excellent fancy "
 who

" waxes desperate with imagination."

but rather believe that

" My endeavour has been

To frame your mind to mirth and merriment,

Which bear a thousand harms, and lengthens life "

and so

" Give me commendation for my free entertainment."

I know I have but touched upon the fringe of this great
 subject; and my thesis is but a thing of " shreds and
 patches," but if I have awakened fresh interest in the
 world's greatest poetic genius, I shall consider myself
 sufficiently rewarded.

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